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FINAL ENVIRONMENTAL IMPACT REPORT

SCH #90020776

MOUNTAIN HOUSE
NEW TOWN GENERAL PLAN AMENDMENT

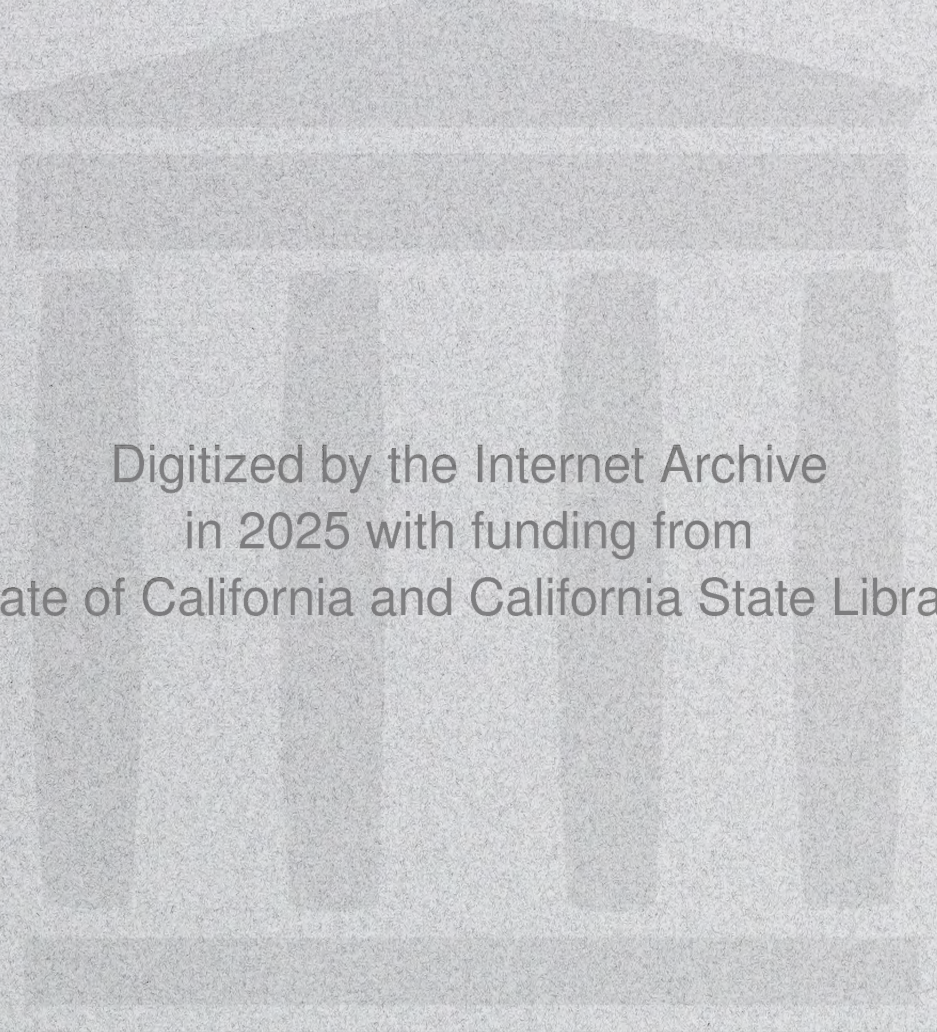
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Volume I of III
Chapters 1-4

March 1992



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SCH # 90020776

MOUNTAIN HOUSE

NEW TOWN GENERAL PLAN AMENDMENT

Volume I of III
Chapters 1-4

March 1992

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	<u>page</u>
4.12 Public Health and Safety	4.12-1
4.13 Biological Resources	4.13-1
4.14 Transportation	4.14-1
4.15 Air Quality	4.15-1
4.16 Noise	4.16-1
 VOLUME II	
5.0 ALTERNATIVES	
5.1 Introduction	5-1
5.2 No Project Alternative	5-5
5.3 Tracy Alternative Site	5-23
5.4 North Livermore Alternative Site	5-35
5.5 Redesigned Project	5-47
5.6 Reduced-Scale Project	5-75
 6.0 ADDITIONAL CEQA CONSIDERATIONS	
6.1 Cumulative Impacts	6-1
6.2 Growth-Inducing Impacts	6-18
6.3 Relationship of Short-Term Uses of the Environment versus Long-Term Productivity	6-20
6.4 Significant Unavoidable Adverse Impacts	6-21
6.5 Significant Irreversible Environmental Changes	6-21
 7.0 MITIGATION MONITORING PROGRAM	7-1
 8.0 REFERENCES AND PERSONS CONSULTED	8-1
 9.0 PERSONS INVOLVED IN REPORT PREPARATION	
9.1 Report Personnel	9-1
 10.0 APPENDICES	
10.1 Notice of Preparation and Initial Study	
10.2 Notice of Preparation Mailing List	
10.3 Letters Sent in Response to Notice of Preparation	
10.4 Public Meeting Notices	
10.5 Summary of Issues Discussed at Public Scoping Meetings	
10.6 Byron-Bethany Irrigation District (BBID) Water Rights and Water District Annexation Procedures	
10.7 Water Quality Background Information	
10.8 Wastewater Reclamation and Water Conservation Opportunities	
10.9 Treatment Sludge and Wastewater Background Information	
10.10 Storm Detention Basin Examples and Storm Runoff Water Quality Data	
10.11 Seismicity Information	
10.12 Hydraulic and Water Quality Report	
10.13 Jobs/Housing Model Tables	
10.14 Regulatory Information Regarding Hazardous Materials	

Table of Contents - *continued*

page

10.15	Data on Electromagnetic Fields	
10.16	Biotic Information	
10.17	Transportation Data	
10.18	Fundamentals of Environmental Noise and Results of Noise Monitoring Survey	
10.19	Fiscal Data	
10.20	Financial Data	

VOLUME III

Comment Number

INTRODUCTION

COMMENT LETTERS

Federal Agencies	A1 - A9
State Agencies	B1 - B17
Local Agencies and District Offices of State Agencies	C1 - C350
Members of the Public, Private Companies, and Citizens Groups	D1 - D435
Draft EIR Public Hearing/Planning Commission Minutes	E1 - E58

RESPONSES TO COMMENTS

LIST OF FIGURES

	<u>page</u>
VOLUME I	
3.1	Regional Location 3-2
3.2	Project Location 3-3
3.3	Aerial Photo of Site-1989 3-4
3.4	Oblique Views of Site 3-5
3.5	Existing Site Topography 3-6
3.6	Acreage under Control of Applicant 3-8
3.7	Proposed Land Use Plan 3-11
3.8	Tentative Phasing Plan 3-15
3.9	Williamson Act Contract Cancellations 3-21
4.1-1	Existing Land Uses 4.1-3
4.1-2	Prime Farmlands 4.1-8
4.1-3	Williamson Act Contract Lands 4.1-10
4.1-4	Boundary of Agricultural Land Survey 4.1-12
4.2-1	Existing 2010 General Plan Designations for Site and Environs 4.2-2
4.2-2	Existing Zoning for Site and Surroundings 4.2-4
4.2-3	Tracy Planning Area 4.2-5
4.3-1	Locations of Recreation Resources 4.3-2
4.3-2	School District Boundary 4.3-8
4.3-3	Tracy Rural Fire District Boundary and Fire Station Sites 4.3-12
4.4-1	Irrigation Service Districts 4.4-2
4.4-2	Byron-Bethany Canals and Drainage System 4.4-3
4.4-3	Proposed Reclaimed Wastewater Irrigation Areas 4.4-23
4.4-4	Off-Site Watershed 4.4-29
4.4-5	Existing Major Utility Easements 4.4-36
4.4-6	Existing Telephone Facilities 4.4-41
4.5-1	Area of Intensive Archaeological Survey 4.5-2
4.6-1	Site Topography, Levees, and Borrow Pits 4.6-2
4.6-2	Regional Geology 4.6-3
4.6-3	Site Soils 4.6-5
4.6-4	Regional Faults 4.6-8
4.7-1	Site Drainage Features 4.7-3
4.8-1	Photo Inventory Map 4.8-2
4.8-2	Views of Project Site 4.8-3
4.8-3	Views of Project Site 4.8-4
4.8-4	Views of Project Site 4.8-5
4.8-5	Views of Project Site 4.8-6
4.8-6	Views of Project Site 4.8-8
4.8-7	Views of Project Site and Adjoining Lands 4.8-9
4.8-8	Photomontage of Proposed Project Site: I-205 4.8-11
4.8-9	Photomontage of Proposed Project: Patterson Pass Road 4.8-14

List of Figures - *continued*

	<u>page</u>
4.8-10	Recommended Setbacks and Landscape Screening 4.8-15
4.8-11	Potential Heights for Building Zones 4.8-18
4.12-1	Potential On-Site Sources of Public Hazards 4.12-2
4.12-2	Strengths of Magnetic Fields 4.12-7
4.13-1	On-Site Crops and Wetlands, June 1991 4.13-2
4.13-2	Photo Location Map 4.13-4
4.13-3	Photographs of Biotic Resources 4.13-5
4.13-4	Photographs of Biotic Resources 4.13-6
4.13-5	Photographs of Biotic Resources 4.13-7
4.13-6	Sensitive Wildlife Species Sightings 4.13-8
4.13-7	Kit Fox Track Stations and Survey Routes 4.13-12
4.13-8	San Joaquin Kit Fox Sightings and Surveys 4.13-16
4.13-9	Photographs of Biotic Resources 4.13-19
4.13-10	Photographs of Biotic Resources 4.13-20
4.13-11	Nesting Distribution of the South Delta Swainson's Hawk Subpopulation 4.13-27
4.14-1	Project Site Vicinity Roadways 4.14-2
4.14-2	Existing 1990 Average Daily Traffic (ADT) Volumes 4.14-4
4.14-3	Existing 1990 Peak Hour Traffic Volumes 4.14-7
4.14-4	Existing 1990 Levels of Service (LOS) - Study Area Roadway Segments 4.14-8
4.14-5	On-Site Circulation Plan and Recommended Changes 4.14-25
4.14-6A	Projected Increase in Daily Traffic on Freeways: Proposed Project Scenario Compared to No Project 4.14-28
4.14-6B	Projected Increase in Daily Traffic on Freeways: Market-Constraint Scenario Compared to No Project 4.14-29
4.14-7A	Total Daily Traffic Volumes on Freeways: Proposed Project Scenario 4.14-30
4.14-7B	Total Daily Traffic Volumes on Freeways: Market-Constraint Scenario 4.14-31
4.14-8A	Projected Increase in Daily Traffic on County Roadways in Project Vicinity: Proposed Project Scenario Compared to No Project 4.14-46
4.14-8B	Projected Increase in Daily Traffic on County Roadways in Project Vicinity: Market-Constraint Scenario 4.14-47
4.14-9A	Total Daily Traffic Volumes in Project Site Vicinity: Proposed Project Scenario 4.14-48
4.14-9B	Total Daily Traffic Volumes in Project Site Vicinity: Market-Constraint Scenario 4.14-49
4.14-10	Lane Needs in Project Vicinity by 2010 - Cumulative Traffic Including Proposed Project 4.14-54
4.15-1	San Joaquin Air Basin 4.15-2
4.16-1	Noise Measurement Locations 4.16-2
4.16-2	Future Noise Exposure (2010) Proposed Project 4.16-7
4.16-3	Traffic Noise Reduction Alternatives for Typical Major Roads 4.16-8

VOLUME II

5.3-1	Alternative Site Adjoining Tracy	5-24
5.3-2	Views of Tracy Alternative Site	5-31
5.4-1	North Livermore Alternative Site	5-37
5.4-2	View of North Livermore Alternative Site	5-44
5.5-1	Redesigned Project	5-49
5.5-2	Polycentric Development Pattern	5-51
5.5-3	Phasing for Redesigned Project	5-58
5.5-4	Photomontage of Redesigned Project Alternative: I-205	5-67
5.5-5	Photomontage of Redesigned Project Alternative: Patterson Pass Road	5-69
5.6-1	Reduced Scale Project	5-77
5.6-2	Photomontage of Reduced-Scale Project Alternative: I-205	5-89
5.6-3	Photomontage of Reduced-Scale Project Alternative: Patterson Pass Road	5-91
6.1	Cumulative Projects Locations	6-4
6.2	Cumulative Analysis Area for Noise Impacts	6-20

LIST OF TABLES

VOLUME I	<u>page</u>
2.1 Summary of Impacts and Mitigation Measures	2-3
3.1 Assessor Parcel Numbers	3-7
3.2 Proposed Land Uses	3-9
3.3 Residential Densities and Acreages	3-11
3.4 Land Uses for Tentative Development Phases I through IV	3-14
3.5 Residential Population by Development Phase	3-16
3.6 Employment by Development Phase	3-17
3.7 Required Approvals	3-20
4.1-1 Comparison of On-Site Crops with 1989 Crop Acreages for San Joaquin County	4.1-2
4.1-2 Chemical Applications on the Project Site and Adjoining Lands	4.1-6
4.1-3 Farmland Categories - Mountain House New Community	4.1-9
4.1-4 Summary of Agricultural Land Results	4.1-13
4.2-1 Project's Relationship to Policies of San Joaquin County General Plan 2010 (Draft)	4.2-7
4.2-2 Project's Relationship to Policies of San Joaquin County Land Use/Circulation Element of The 1995 General Plan	4.2-16
4.3-1 Proposed Recreational Facilities	4.3-4
4.3-2 School-Age Children Generated by the Project	4.3-9
4.3-3 Recommended Phasing for High School Construction	4.3-11
4.3-4 Solid Waste Generation	4.3-17
4.3-5 Library Space Demand by the Project	4.3-18
4.4-1 Water Demand Calculations for Project Site, by Phases	4.4-10
4.4-2 Wastewater Reclamation Opportunities	4.4-12
4.4-3 Treated Water Storage Requirements	4.4-14
4.4-4 Estimated Water Treatment Sludge Quantities	4.4-15
4.6-1 Major Faults Potentially Affecting the Project Site	4.6-7
4.9-1 Service Providers Proposed by Applicant for Mountain House New Town	4.9-2
4.9-2 County Service Framework	4.9-3
4.9-3 San Joaquin County Revenues	4.9-7
4.9-4 1990 Taxable Retail Sales, by City	4.9-8
4.9-5 General Purpose Net County Costs (NCC)	4.9-10
4.9-6 City of Tracy Program Costs Applicable to Mountain House	4.9-13
4.9-7 Summary of Revenues and Expenditures for Proposed Project	4.9-15
4.9-8 Summary of Revenues and Expenditures for Proposed Project Assuming 40 Percent Buildout of Commercial and Industrial Land Uses	4.9-17
4.10-1 Capital Improvement Funding, Mountain House New Town	4.10-3
4.10-2 Capital Cost Allocation Factors by Land Use	4.10-7
4.10-3 Capital Cost Allocations by Land Use	4.10-8
4.10-4 Capital Cost Burden by Land Use	4.10-9

	<u>page</u>
4.11-1	Existing Jobs-Housing Balance-1990 4.11-2
4.11-2	Land Use Plan Assuming Market Constraints 4.11-8
4.11-3	Jobs and Employed Residence at Buildout Assuming Market Constrained Development 4.11-10
4.11-4	Proposed Home Prices 4.11-11
4.11-5	Housing Prices by Income Category 4.11-11
4.11-6	Net Housing Deficit by Income Category 4.11-12
4.11-7	Housing Affordability for Low Income Residents of San Joaquin County 4.11-13
4.11-8	Impact of the Proposed Project on City of Tracy in Year 2010 4.11-14
4.12-1	Regulatory Limits on Field Strengths of Transmission Line Rights-of-Way 4.12-8
4.13-1	On-Site Crop Acreage 4.13-1
4.14-1	Existing Freeway Levels of Service, 1990 PM Peak Hour 4.14-9
4.14-2	Existing Levels of Service for Rural Roads in the Project Area 4.14-10
4.14-3	Project Trip Generation Rates 4.14-17
4.14-4	Mountain House Trip End Generation (1995-2010) 4.14-19
4.14-5	Phase I (1995) Mountain House Trip End Generation 4.14-20
4.14-6	Phase II (2000) Mountain House Trip End Generation 4.14-20
4.14-7	Phase III (2005) Mountain House Trip End Generation 4.14-21
4.14-8	Phase IV (2010) Mountain House Trip End Generation 4.14-21
4.14-9	Projected Distribution of Total Daily Trips (1995-2010) 4.14-22
4.14-10	Projected Distribution of Daily Work Trips (1995-2010) 4.14-22
4.14-11	Internal Work-Related Traffic Characteristics 4.14-23
4.14-12A	Total Daily Traffic Volume Changes on Freeways in Project Vicinity 4.14-32
4.14-12B	Total Daily Traffic Volume Increases on Freeways in Project Vicinity 4.14-33
4.14-13A	Summary of Projected Freeway Volumes and Levels of Service, Proposed Project Scenario 4.14-35
4.14-13B	Summary of Projected Freeway Volumes and Levels of Service, Market-Constraint Scenario 4.14-37
4.14-13C	Summary of Projected Freeway Volumes and Levels of Service 4.14-39
4.14-14A	Traffic Volume Increases on Key County Roads, Proposed Project Scenario 4.14-50
4.14-14B	Traffic Volume Increases on Key County Roads, Market-Constraint Scenario 4.14-51
4.14-15A	Traffic Volume Increases on County Roads Adjacent to Site, Proposed Project Scenario 4.14-55
4.14-15B	Traffic Volume Increases on County Roads Adjacent to Site, Market-Constraint Scenario 4.14-56
4.14-16	Recommended Improvements and Cost Estimates for Roadways near Project Site 4.14-57
4.15-1	Ambient Air Quality Standards 4.15-3
4.15-2	Air Quality Data for Project Area 4.15-7
4.15-3	Project Emissions under Proposed Project Scenario 4.15-9
4.15-4	Project Emissions under Market-Constraint Scenario 4.15-10

4.15-5	Worst Case 1-Hour Carbon Monoxide Concentrations	4.15-13
4.15-6	Worst Case 8-Hour Carbon Monoxide Concentrations	4.15-14
4.16-1	Existing Average Noise Levels at Key Locations within and near the Project Site	4.16-1

VOLUME II

5.1-1	Project Alternatives' Consistency with Project Objectives	5-2
5.1-2	Summary Table of Impacts of Alternatives as Related to the Project	5-6
5.3-1	Summary of Revenues and Expenditures, Tracy Annexation	5-32
5.3-2	2010 Regional Air Quality Impacts of Project and Alternatives	5-34
5.3-3	Comparison Year 2010 Carbon Monoxide Concentrations with Alternatives	5-36
5.5-1	Redesigned Project as Compared with Proposed Project	5-54
5.5-2	Residential Population for Redesigned Project Alternative versus Proposed Project	5-55
5.5-3	Employment for Redesigned Project Alternative Compared with Proposed Project	5-59
5.5-4	Summary of Revenues and Expenditures	5-71
5.6-1	Reduced-Scale Project as Compared with Proposed Project	5-79
5.6-2	Residential Population for the Reduced-Scale Alternative	5-83
5.6-3	Employment for Reduced-Scale Alternative	5-84
5.6-4	Summary of Revenues and Expenditures, Reduced-Scale Alternative	5-92
6.1-1	Cumulative Multi-County Projects	6-3
6.1-2	San Joaquin Valley Air Basin Population and Employment Projections	6-16
6.1-3	San Joaquin Valley Air Basin Project Regional Emissions	6-17
7-1	Summary Table for Mitigation Monitoring Program	7-2

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 PURPOSE OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

This Draft Environmental Impact Report (DEIR) has been prepared to provide an assessment of the potential environmental effects associated with the proposed General Plan Amendment and Williamson Act contract cancellations for the proposed Mountain House New Town. This DEIR has been prepared pursuant to the California Environmental Quality Act (CEQA), as amended, the State CEQA Guidelines issued by the California Office of Planning and Research, and the San Joaquin County Environmental Guidelines (Draft). San Joaquin County is the lead agency for the project evaluated in this DEIR. The preparation of this DEIR has been timed to allow the San Joaquin County Board of Supervisors to consider the potential environmental impacts of the proposed General Plan Amendment and Williamson Act contract cancellations, the first discretionary approvals in the project approval process.

The proposal to develop the ~~4,677~~ **4,667**-acre Mountain House New Town is considered a "project" as defined by the CEQA Guidelines (Section 15378). The approval process for the project will involve an amendment to the County General Plan and cancellation of Williamson Act contracts. Before construction of the project could occur, the applicant, Trimark Communities, would also have to prepare a Specific Plan that would be subject to additional environmental review under CEQA. The environmental review of the Specific Plan will use this DEIR, supplemented to the extent necessary and appropriate.

The CEQA Guidelines require preparation of an EIR when a lead agency determines that a project may have a significant effect on the environment (Section 15064). The need to prepare an EIR for the project was determined by the San Joaquin County Community Development Department after preparation of an Initial Study (Appendix 10.1) and as a result of comments received from public agencies and members of the community.

The purpose of this DEIR is to identify: 1) the potential significant effects of the proposed project on the environment and to indicate the manner in which those significant effects can be mitigated or avoided; 2) any unavoidable adverse impacts that cannot be mitigated; and 3) alternatives to the proposed project.

1.2 CONTENTS OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

This DEIR consists of two volumes. Volume I contains the text of the environmental analyses and Volume II contains the appendices referenced in the text. Volume I contains the following sections:

- Chapter 1 provides an introduction and overview describing the intended use of the DEIR and the review and certification process.
- Chapter 2 summarizes the DEIR findings, identifying potential impacts and proposed mitigation measures.

1.0 INTRODUCTION

- Chapter 3 provides a description of the project, its location, the applicant's objectives in proposing the project, specific land planning features, and required approvals.
- Chapter 4 presents a full discussion of the environmental effects of the project. Each section (e.g., land use, visual quality, geology) describes the environmental setting, evaluates potential impacts resulting from implementation of the proposed project, and recommends feasible mitigation measures for those impacts.
- Chapter 5 discusses alternatives to the project. Each alternative is described, and impacts associated with each alternative are compared to impacts of the proposed project. The feasibility of the alternatives is also discussed.
- Chapter 6 provides CEQA-required discussions regarding cumulative impacts, growth-inducing impacts, the relationship between short-term uses of the environment and maintenance of long-term productivity, significant unavoidable adverse impacts, and significant irreversible environmental changes.
- Chapter 7 includes a mitigation monitoring program, as required by Section 21081.6 of the California Public Resources Code.
- Chapter 8 lists references and persons consulted during the DEIR preparation.
- Chapter 9 identifies the persons involved in the DEIR preparation.
- Chapter 10 includes appendices.

1.3 ENVIRONMENTAL IMPACT REPORT REVIEW PROCESS

NOTICE OF PREPARATION AND PUBLIC MEETING

This DEIR is a "project" EIR. Project EIRs focus on the impacts of a particular project and are the most common type of EIR. An Initial Study and Notice of Preparation (NOP) (Appendix 10.1) concerning the proposed Mountain House New Town project were prepared by the San Joaquin County Community Development Department and distributed to local, regional, and State agencies and other interested parties on 31 July 1990 (Appendix 10.2). Letters received in response to the NOP are included in Appendix 10.3.

A public scoping meeting was held on 17 August 1990 to discuss the scope and content of the DEIR and to solicit concerns from the local community as well as local, State, and regional agencies regarding the proposed project. A notice of this meeting was mailed to organizations, responsible agencies, and individuals (Appendix 10.4). Summaries of issues discussed at the public meeting are included in Appendix 10.5. In addition, on 21 August 1990, a meeting was held by the County for all property owners within the project boundaries to discuss the proposed project, EIR, and tentative schedule.

DRAFT EIR REVIEW AND PREPARATION OF FINAL EIR

A public hearing on the DEIR will be held during the public review period. Following receipt of comments on the DEIR, responses will be prepared and incorporated with the comments into the FEIR. The FEIR will be reviewed and certified by the Board of Supervisors prior to taking action on the project.

FUTURE APPROVALS

The Board of Supervisors will make the final decision for certification of the Final EIR. Upon review and consideration of the Final EIR (FEIR), the San Joaquin County Planning Commission and Board of Supervisors will determine whether to approve, reject, or revise the proposed project.

Approval of the project, as proposed or revised, would be accompanied by written findings for each significant adverse environmental effect identified in the FEIR. Findings must be accompanied by a brief explanation of the rationale for each finding and will indicate that: 1) mitigation measures to reduce adverse impacts to less-than-significant levels have been adopted; 2) mitigation measures to reduce adverse impacts to insignificant levels are within the jurisdiction of another public agency and either have been or should be adopted by that public agency; or 3) specific effects are unavoidable and substantially unmitigable, but are considered acceptable because overriding considerations indicate the benefits of the project outweigh adverse effects.

When making findings, the County must adopt a reporting or monitoring program for mitigation measures incorporated into the approved project that reduce or avoid significant effects on the environment. The mitigation monitoring program has been prepared in conjunction with the DEIR (Chapter 7 of the DEIR).

1.4 DETAIL OF ENVIRONMENTAL REVIEW

One intent of CEQA is that an environmental analysis "should be prepared as early as feasible in the planning process to enable environmental considerations to influence project program and design and yet late enough to provide meaningful information for environmental assessment" (CEQA Guidelines, Section 15004[b]). By completing a DEIR at this stage in the process, the County maintains flexibility in requiring changes to the project based on findings from the environmental review process.

1.0 INTRODUCTION

Certain details regarding the project are not available at this stage; for example, exact locations and designs of buildings are not known. Therefore, an analysis has been provided in this DEIR using generalized data for numbers of residential units, square footage of commercial and industrial buildings, and other proposed land uses. More detailed information is expected to be available at the Specific Plan stage. When appropriate, this DEIR identifies issues that should be addressed for preparation and review of the Specific Plan.

2.0 SUMMARY

2.0 SUMMARY

2.1 PROJECT DESCRIPTION

This DEIR evaluates the potential environmental impacts associated with an amendment to the San Joaquin County General Plan and the eventual construction of the Mountain House New Town on 4,667 acres in western San Joaquin County. The General Plan Amendment would amend the current General Plan designation, which is Agriculture, to a variety of urban and recreational land use designations. In addition, implementation of the proposed project would require the cancellation of lands currently under Williamson Act contracts.

PROJECT CHARACTERISTICS

Total Site	4,667 Acres
Residential	2,398 Acres
	16,003 Units
Commercial	275 Acres
Industrial	427 Acres
Institutional	333 Acres
Infrastructure	484 Acres
Recreational	750 Acres

A total of 16,003 residential units would be provided on 2,398 acres of the project site. A total of 275 acres would be designated for commercial use, while 427 acres would be designated for industrial use. Institutional land uses such as schools and utility areas would require an additional 333 acres. Infrastructure such as roads and an existing railroad line would cover 484 acres of the project site. The remaining 750 acres would be designated for recreational uses, including two golf courses, regional and neighborhood parkland, and a wetlands restoration area.

Williamson Act contract cancellations would be required for 3,243 acres of the project site. While Notices of Nonrenewal have been filed for contracts under the applicant's control (2,920 acres), they will not expire for seven to ten years and the County currently requires that all Williamson Act contracts be canceled by the time of the Specific Plan period. (The applicant is requesting that this requirement be deleted via an amendment to the Development Title.) The applicant is also preparing a Specific Plan for the project that would be acted on after approval of the General Plan Amendment.

The project would be developed in four phases between 1993 and 2010. For the purposes of environmental assessment, the applicant has submitted a tentative or estimated phasing plan. The applicant has proposed that the first phase of development occur near the center of the project site. Subsequent phases would occur outward from Phase I. The last phase is proposed for that portion of the site between Grant Line Road and Interstate-205 (I-205), and the far northwestern corner of the project site. This phasing proposal by the applicant reflects the applicant's landholdings as opposed to other property owners within the new town boundaries. The actual phasing plan (which will be developed for incorporation into the Specific Plan) will be based on both the need to respond flexibly to market conditions, as well as to utilize existing infrastructure, and to develop new infrastructures and services in a cost-effective manner.

Major access to the site would be from I-205, Patterson Pass Road, Grant Line Road, and Byron Road. The proposed project would include a newly-constructed circulation system within the boundaries of the project site, ranging from minor arterials to local collector streets. One overpass would be constructed over Byron Road and the Southern Pacific railroad tracks to provide access to the northern portion of the site and Old River.

2.2 SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

A summary of the project's potential environmental impacts and recommended mitigation measures is provided in Table 2.2-1. The summary table is arranged in ~~four~~ **three** columns: 1) environmental impacts; 2) recommended mitigation measures; ~~3) timing of mitigation measure;~~ and 4) **3) the level of significance of the impacts after implementation of mitigation measures.** A series of mitigation measures is noted where more than one mitigation measure may be required to achieve an insignificant impact. For a complete description of potential impacts and recommended mitigation measures, please refer to the specific issues section in Chapter 4 of this DEIR. **When text has been added or changed from that originally shown in the Draft EIR, bold lettering has been used. When entire mitigation measures have been deleted, this deletion is noted.**

2.3 ALTERNATIVES TO THE PROJECT

Five alternatives to the proposed project are analyzed in this DEIR including the No Project Alternative.

1. NO PROJECT ALTERNATIVE

Construction of the proposed project would not occur. A General Plan Amendment and Williamson Act contract cancellations would not be required. The project site would remain in agricultural use.

2. TRACY ALTERNATIVE SITE

The proposed project would be relocated to the western edge of the City of Tracy. Eventual annexation of the project to the City has been assumed. The only changes to this alternative land use plan, as compared to the proposed project, would be removal of the 60-acre marina and commercial uses of the proposed project's town center. The town center would be replaced with other types of commercial uses at this alternative site.

3. NORTH LIVERMORE ALTERNATIVE SITE

The proposed project would be relocated to a portion of the North Livermore Planning Area which is north of Interstate-580 and north of the City of Livermore. Similar to the Tracy Alternative Site, this alternative

would not include a marina. That acreage would instead be used for regional parkland adjoining Cayetano Creek.

4. REDESIGNED PROJECT

This alternative includes a major redesign of the project for an ultimate population of about 34,000, as compared to the proposed project's population of 43,636 persons. A major difference between the proposed project and this alternative is the village-centered concept, whereby development would be concentrated around four villages. This development form would promote the use of public transit as well as pedestrian and bicycle use. This alternative would maintain 232 acres in agricultural use and include 976 acres of regional parkland. The total acreage for residential, commercial, and industrial use would be slightly less under this alternative.

5. REDUCED-SCALE PROJECT

This alternative includes a significant reduction in the overall scale of the project, and would occur within that portion of the project site bounded by Byron Road in the north and Grant Line Road on the south. Thus, the total area for development would be 2,357 acres, leaving 2,310 acres in agricultural use. Total residential and commercial development would be about one-half that of the proposed project. Industrial acreage of this alternative would be about 30 percent of that planned for the proposed project.

TABLE 2.1

SUMMARY TABLE FOR MITIGATION MONITORING PROGRAM

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ LAND USE AND AGRICULTURAL ISSUES		
4.1-1 Development of the proposed project would result in the loss of approximately 3,600 acres of Prime Farmland and would require cancellation of 2,920 acres currently under Williamson Act contract. Cancellation could result in the premature loss of this resource.	4.1-1(a) The loss of 3,600 acres of Prime Farmland is an unavoidable adverse impact. The only full mitigation measure for the above impact would be denial of the proposed project.	SU
	4.1-1(b) All required findings must be made by the Board of Supervisors in order to approve the Cancellation of the Williamson Act contracts.	I
	4.1-1(c) The applicant should be assessed an impact fee for each acre converted to an urban designation (whether residential, industrial, or commercial use) to be applied toward the purchase of development rights on agricultural lands or to support land trusts that purchase conservation easements on agricultural land. Such a fee system should be identified in the County's Development Title in compliance with the recommended policy supporting such a fee as included in the County's Revised Draft General Plan 2010 (San Joaquin County, 1991a).	I

Note: Any reference to a **Specific Plan** requirement in the following table includes one or more of three subsequent plans that will be required by the County after action has been taken on the General Plan Amendment. The earlier Specific Plan process is now composed of the following three detailed plans: 1) a **Public Services and Facilities Plan**, 2) a **Public Financing Plan**, and, 3) one or more **Specific Plans**. The public services and facilities plan and the public financing plan will be community-wide in scope, while specific plans may be submitted according to phasing or ownership considerations.

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.1-2 Conflicts between urban/rural land uses would occur, particularly where agricultural operations abut residential development. Such conflicts could result in conversion of agricultural lands outside the project site boundaries to non-agricultural uses.	4.1-2(a) A 1,000 foot-wide buffer area should be provided along the western boundary of the project site and included in the proposed General Plan amendment. This buffer could incorporate non-residential uses such as the golf course, an equestrian center, a trail system, and/or a regional park. A roadway could extend through this buffer. The buffer area could also accommodate an agricultural park whereby residents of the new community could have individual plots for raising fruits and vegetables, or a single operator practicing organic farming could use the land. If adjoining lands in Alameda County eventually convert to urban uses, the recommended buffer area could be developed for other uses when it is no longer needed. Alternatively, the recommended buffer area could have development rights permanently restricted by use of a conservation easement or placement of the buffer acreage in an agricultural land trust.	I
	4.1-2(b) Fencing should be installed along the perimeter of the western boundary to prevent trespassing and littering.	
	4.1-2(c) The deed of each newly created parcel in proximity to agricultural operations should include a clear statement to inform new buyers that they are purchasing land or homes in an agricultural area.	
	4.1-2(d) On-site residents should be notified that the County has adopted a Right-to-Farm ordinance to protect farmers from nuisance suits as a result of normal farming practices. The County should enforce this ordinance and ensure that proper farming practices occur to minimize conflicts.	
	4.1-2(e) Deleted	
4.1-3 Land use conflicts between proposed on-site land uses and adjoining land uses could result from odors and noise associated with agricultural practices, traffic, and on-site activities.	4.1-3 All recommended mitigation measures for potential odor and noise impacts, as described in Sections 4.15 and 4.16 of this DEIR, should be incorporated into the proposed project.	I
4.1-4 The Delta-Mendota Canal and on-site irrigation canals could present a public safety hazard without proper fencing and screening.	4.1-4 Project plans should incorporate fencing and cautionary signage of major waterways, particularly where the canals and irrigation channels are in close proximity to residential areas.	I

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Note: When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
<p>4.1-5 The project site would be subject to frequent overflights of airline traffic using the East Contra Costa County Airport. The project area is located in proximity to the traffic pattern area for the airport. Runway alignment may cause landing and takeoff approaches to occur over the project site.</p>	<p>4.1-5 The Specific Plan should incorporate land uses that are less sensitive to airport-related noise on those portions of the site nearest the flight path. For example, the proposed low-density residential uses in the southwest portion of the project site should be replaced with commercial or industrial uses. The recommended 1,000-foot buffer area (Mitigation Measure 4.1-2(a)) would partially mitigate this impact if provided on-site. Additionally, policies should be incorporated into the Specific Plan limiting building heights which may be located in the flight path. If land uses are changed at the Specific Plan stage, an additional General Plan amendment may be necessary.</p>	<p>I</p>

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ ZONING AND GENERAL PLAN POLICIES		
4.2-1 The project would conflict with many of the County's proposed policies of the Revised Draft General Plan 2010 as well as with policies of the adopted Land Use/Circulation Element of the General Plan.	4.2-1(a) The removal of Prime Farmland is a significant unavoidable adverse impact that cannot be mitigated. The only mitigation measure that could result in compliance with the County Policy to preserve prime agricultural land would be denial of the project or approval of the project at an alternative location. Aside from this one conflict with County policies, the remaining recommended mitigation measures would reduce the impact to a level of insignificance.	SU
	4.2-1(b) If the project were approved at the proposed project site, the following mitigation measures should be required to protect on-site and adjoining agricultural lands: a 1,000-foot wide buffer at the site's western edge; notification of property owners regarding the County's Right-to-Farm Ordinance; project contributions towards an agricultural land trust; inclusion of lands designated for agricultural use within the project site boundaries; and redesignation of vacant lands from urban to agricultural use elsewhere in the County. The County currently has a private, non-profit farmland trust which can accept donations to be used for the permanent protection of farmland. A policy to support this trust is included in the Revised Draft General Plan 2010.	I
	4.2-1(c) To create an urban center for the project, the core commercial areas of the project should be able to exceed the 45-foot height limit under special circumstances (e.g., provision of underground or structured parking within commercial buildings or inclusion of affordable housing in mixed-use areas).	
	4.2-1(d) Additional neighborhood commercial centers should be included. Three school/park areas at the site's western boundary should be relocated farther east to be more central to residences.	
	4.2-1(e) A new pedestrian plan should be developed which includes pedestrian paths following open space corridors and connecting neighborhood commercial centers and primary employment areas.	
	4.2-1(f) Bicycle paths should follow open space corridors and roads that are two-lane as well as four or more lanes.	
	4.2-1(g) Agricultural and landscaped buffer areas should be included in the proposed project to maintain Mountain House as a distinct community and to minimize growth-inducing impacts.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.2-1(h) Identifiable neighborhoods that would accommodate 3,000 to 5,000 residences should be included at the Specific Plan stage.	
	4.2-1(i) The Specific Plan for the project should include provisions for multi-family residential uses above ground-floor retail uses.	
	4.2-1(j) Neighborhood commercial areas should be sized to include only those commercial uses needed for its target neighborhood.	
	4.2-1(k) If a Community Commercial area is to be located north of Byron Road, more intensive office, residential, and retail uses should surround this area. Alternatively, only one Community Commercial district should occur. This district should be located within the project's central business district.	
	4.2-1(l) The Specific Plan should identify landscape buffering at the edge of the General Commercial areas.	
4.2-2 The project could result in the redirection of growth away from urban and rural communities identified in the County's General Plan. The project's estimated population represents 42.6 percent of the growth projected for the entire Tracy Planning Area without the new communities of Tracy Hills and New Jerusalem (Figure 4.2-3). Such redirection of growth could have significant fiscal ramifications for existing urban and rural communities.	4.2-2 If the proposed project General Plan amendment were approved, the County should redesignate County lands within the Tracy Planning Area. Those lands, which are designated for development, should be redesignated to agricultural uses until such lands are found necessary to accommodate the projected County growth. Such redesignation would be especially necessary if the three new communities within the Tracy Planning Area were approved. Significant acreages on the west, east, and south sides of the City of Tracy are shown in the County General Plan 2010 as areas for urban uses. Those areas, which are outside the City's existing Sphere of Influence, should be the first areas to be redesignated to agricultural uses.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ PUBLIC SERVICES/Parks and Recreation		
4.3.1-1 Regional park facilities in southwestern San Joaquin County would not be adequate to serve residents in the first phase of the project.	4.3.1-1 During Phase I, some regional parkland should be provided on-site and should be located along Old River, or a funding mechanism, such as the creation of a special district or a County Service Area (CSA), should be established to fund operations and an in-lieu fee program should be established by the County Parks and Recreation Department to fund operations and development costs associated with an increased demand on the regional parks in southwestern San Joaquin County. The method of funding for acquisition, development, and on-going maintenance should be incorporated into the text of the Specific Plan. In addition, the proposed golf course should have unrestricted access and be donated to the County if it will be used to offset some of the regional park facility needs.	I
4.3.1-2 Inadequate phasing of water recreation facilities would increase the demand for existing County facilities in the area.	4.3.1-2 The applicant should provide, in Phase I, boating facilities to include a boat ramp, boat storage, and docking facilities.	I
4.3.1-3 Development of a 70-acre regional park in Phase II would be inadequate to meet regional park needs.	4.3.1-3 A minimum of 205 acres of regional parkland should be provided either on-site by the end of Phase II, or in-lieu development fees should be assessed to supplement the shortage of parkland as defined by County standards an in-lieu fee program should be established by the County Parks and Recreation Department to fund operations and development costs associated with regional parks. The proposed on-site golf course should have unrestricted access to offset some of the demand for regional parkland if it will be used to off-set some of the regional park facility needs. Provision of adequate regional parkland should be identified in the Specific Plan when a final phasing plan is available.	I
4.3.1-4 By the end of Phases III and IV, total acreage set aside for a regional park would be deficient in terms of County standards.	4.3.1-4(a) An additional 326 to 366 acres of regional parkland should be provided on-site by the end of Phase IV, or in-lieu development fees should be assessed to supplement the shortage of parkland as defined by County standards. Provision of adequate regional parkland should be identified in the Specific Plan. The exact amount of required acreage would depend on the designation of the proposed on-site wetland. The acreage should also reflect the phasing plan included in the Specific Plan and should meet County standards. an in-lieu fee program should be established by the County Parks and Recreation Department to fund operations and development costs associated with regional parks.	I

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.3.1-4(b) The Specific Plan must provide an implementation plan for the funding of acquisition, on-going maintenance, and development costs for all recreation and park facilities.	
■ PUBLIC SERVICES/Schools		
4.3.2-1 Bussing of students in Phase I would place a greater demand on existing limited school bus systems.	4.3.2-1 Through the establishment of a Mello-Roos District, the applicant should provide necessary funds for the purchase of school busses for both the elementary and high school districts. This measure or other appropriate measures should be identified in the Specific Plan.	I
4.3.2-2 The infusion of students from the project would significantly impact the new high school (currently under construction) until a new high school is constructed at the project site.	4.3.2-2 The recommended schedule for high school funding and construction provided by the high school district (Table 4.3-3) should be agreed upon by the high school district and the applicant prior to approval of the Specific Plan. The schedule should reflect construction of the high school to begin in Phase I rather than Phase II as proposed.	I
■ PUBLIC SERVICES/Fire Protection Service		
4.3.3-1 The proposed project would temporarily increase the demand for local fire protection service until on-site services are provided. Plans to provide this service have not been finalized by the applicant.	4.3.3-1(a) Institutional arrangements for providing fire protection service should be finalized in the Specific Plan.	I
	4.3.3-1(b) The Specific Plan should include policies relative to fire flow requirements, funding assistance for the construction of fire stations, and ownership of the fire stations.	I
■ PUBLIC SERVICES/Police Protection Service		
4.3.4-1 The proposed project would temporarily increase the demand for police services from the County Sheriff's Department.	4.3.4-1 Institutional arrangements for providing police services should be finalized in the Specific Plan.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.3.4-2 The number of marine patrols both in San Joaquin and Contra Costa counties would be insufficient at project buildout to provide effective law enforcement along Old River and in the Delta within the project vicinity.	4.3.4-2(a) The applicant's public safety plan should include provisions to patrol the Mountain House marina and the immediate vicinity of the marina.	I
	4.3.4-2(b) Fees, based on the number of berths, should be assessed to help offset costs for maintaining the Sheriff's Department Marine Patrol Division in both San Joaquin and Contra Costa counties .	
	4.3.4-2(c) The Specific Plan should incorporate crime prevention policies such as providing security fencing, good lighting, visible berth numbers, and locked gates on boat docks for the marina and related facilities.	
■ PUBLIC SERVICES/Solid and Hazardous Waste		
4.3.5-1 Solid waste projected for project buildout could be 67,850 tons per year without implementing a recycling program. Solid waste generated by the project would contribute to the reduction in landfill capacity.	4.3.5-1 The Specific Plan should incorporate policies to reduce the waste stream generated by the Mountain House project. Such programs should include establishing a curbside recycling program; a commercial recycling program; provision for on-site recycling centers, transfer stations, and composting; and a public information program. Policies should include the County's Waste Plan Format for development projects.	I
■ PUBLIC SERVICES/Libraries		
4.3.6-1 The proposed project would increase demand for library services.	4.3.6-1 Planning for and constructing an on-site library with a minimum of 10,000 square feet should begin in Phase II. By full project buildout, an additional 12,000 square-foot library should be constructed at the project site.	I

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ PUBLIC UTILITIES/Water		
4.4.1-1 If lands within the project site that are currently outside the Byron-Bethany Irrigation District (BBID) were not annexed, development could not occur until alternative water sources were secured. If groundwater resources were available and developed in those portions, overdrafting of groundwater may occur.	4.4.1-1(a) Annexation of the unincorporated portions of the project site and of the portions of the project site that are within the Westside Irrigation District and Plain View Water District should be initiated. The annexation negotiations should be initiated completed prior to the approval of the Specific Plan through the Contra Costa County or San Joaquin County Local Agency Formation Commission. These negotiations should ascertain whether annexation of the unserved portions of the project site and the portion of the project site within the Westside Irrigation District to BBID is possible.	I
	4.4.1-1(b) If annexation to BBID were not approved, the applicant should secure an adequate water supply for the areas outside BBID prior to approval of the Specific Plan. If groundwater resources were to be used, a thorough hydrogeological assessment of local aquifers must be performed. Alternatives could include: scaling down the project to fit wholly within the boundaries of BBID; utilization of available riparian water rights that are in place for the land north of Byron Road ; developing a conjunctive use plan which entails the storage of surface water in a groundwater basin; obtaining a separate water supply from the State Water Project or Federal Central Valley Project; and demonstrating adequate groundwater resources to serve the project.	
4.4.1-2 If the State Water Resources Control Board (SWRCB) denies BBID's application for winter water rights, the absence of a year-round surface water supply to the project could result in the lack of a surface water supply to the project during the winter months. If groundwater resources were available and developed in the project to augment the surface water supply, overdrafting of local groundwater may occur if no alternate winter water supply is procured.	4.4.1-2 The project proponent should demonstrate a reliable water supply throughout the calendar year prior to approval of the Specific Plan.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.4.1-3 Changing part of BBID's service area from agricultural water use to municipal/industrial water use would create institutional issues requiring resolution. Without resolution, a reliable water supply could not be guaranteed. Indirectly, impacts to agricultural operations could occur due to the potential for rising water costs.	4.4.1-3 The applicant should execute an enforceable agreement with BBID prior to approval of the Specific Plan to supply water to the project site, which would protect BBID and its customers from economic loss and water interruption.	I
4.4.1-4 The projected available supply of water to the project site (8,125 AF per year) is less than the project demand (10,391 AF per year) and could result in an inadequate water supply for the project. If groundwater resources were available and developed, over-drafting of local groundwater resources could occur.	4.4.1-4(a) Wastewater reclamation and water conservation techniques should be implemented to reduce the potable water demand to the supply level of 8,125 AF/year or lower. Such techniques should be fully described in the Specific Plan for the project.	I
	4.4.1-4(b) For the Specific Plan, the applicant should address the potential for installation of a dual distribution system. If a dual distribution system were not included, a detailed justification should be supplied.	
	4.4.1-4(c) Water conservation measures should be incorporated into the design of the project to the maximum extent possible. These measures should be incorporated into the Specific Plan.	
	4.4.1-4(d) Overall water demand could be reduced by a reduction in project density. This mitigation measure would only be needed if other strategies did not reduce total water demand to 8,125 AF/year or lower. A subsequent GPA could be required to reflect required lower densities.	
4.4.1-5 A potable water supply for the project may not be available to supply the early years of the project if the permit needed to operate a public drinking water system were not obtained in a timely manner or the design of the water treatment plant does not provide all the treatment necessary to meet drinking water standards.	4.4.1-5 The applicant should initiate the permitting process with the California Department of Health Services, Office of Drinking Water and begin any source water sampling necessary to fulfill the regulations and to aid in the design of the water treatment plant prior to approval of the Specific Plan.	I

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.4.1-6 An inadequate water treatment sludge disposal system could adversely impact local water quality.	4.4.1-6 A sludge management plan, for both water treatment and wastewater treatment sludge, should be developed as part of the project's Specific Plan. The plan should include a detailed analysis of all disposal options and beneficial reuse of the sludge to the maximum extent possible.	I
4.4.1-7 An uncontrolled release of hazardous materials associated with water treatment practices could potentially occur and impact water resources and public health.	4.4.1-7(a) The applicant should develop a preliminary Hazardous Materials Business Plan to address material stored, used, and generated by the proposed on-site water treatment plant. This Plan should be included as part of the project's Specific Plan.	I
	4.4.1-7(b) Prior to design of the water treatment plant, chemicals should be carefully selected for use during operations to minimize the potential for accidental releases. Chemicals to be used at the water treatment plant should be specified in the Specific Plan. The design of the chemical handling and storage facilities in the water treatment plant should be designed to provide secondary containment and safety features to minimize and effectively mitigate accidental releases.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ PUBLIC UTILITIES/Wastewater		
4.4.2-1 Inadequately treated reclaimed wastewater may result in the discharge of untreated or partially treated wastewater to fields adjacent to the site that could impact local surface and groundwaters and public health.	4.4.2-1(a) The applicant should initiate the permitting process with the California Department of Health Services, Office of Drinking Water and the Central Valley Regional Water Quality Control Board for the proposed wastewater reclamation system prior to the Specific Plan. This would provide for early identification of constraints. The Wastewater Discharge Permit must be issued before construction begins.	I
	4.4.2-1(b) The applicant should develop a reclaimed wastewater irrigation plan that includes specifications for individual irrigation system designs, irrigation practices, and monitoring of actual watering practice to determine compliance with permit restrictions. The plan should also identify how adequate acreage necessary for irrigation with reclaimed water would be guaranteed.	
	4.4.2-1(c) For the Specific Plan, the applicant should provide a preliminary design and plant layout of the reclaimed wastewater treatment plant including water storage facilities.	
4.4.2-2 Discharging treated wastewater or other waste to Old River could adversely impact local water resources and public health.	4.4.2-2(a) More on-site reclamation opportunities should be investigated to reduce the surface water discharge and to reduce the project's water demand. Such opportunities should be identified in the Specific Plan for the project.	I
	4.4.2-2(b) An off-site reclamation system should be developed that is sized to meet as much wastewater as possible up to the entire annual flow. Such a system should be identified in the Specific Plan for the project.	
	4.4.2-2(c) If sufficient land were not available to reclaim all of the treated wastewater, an application for the proposed wastewater discharge to Old River should be submitted for consideration by the Central Valley Regional Water Quality Control Board prior to Specific Plan approval and a permit should be obtained prior to project construction.	
	4.4.2-2(d) The wastewater treatment plant should be designed with a high degree of redundancy for every unit process to minimize the potential for incomplete treatment.	
	4.4.2-2(e) An aggressive public education campaign should be considered in developing the Specific Plan to inform the public of what wastes could be disposed of in the sanitary sewer and what alternative disposal options are available for other wastes. The program should include information regarding alternative household chemicals that are the least environmentally harmful.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.4.2-2(f) A pretreatment program should be considered in developing the Specific Plan. The program would be designed to educate and regulate businesses regarding what may be discharged to the sanitary sewer.	
	4.4.2-2(g) A hazardous waste collection program should be implemented by the Community Services District to provide readily available disposal options for residents within the project.	
	4.4.2-2(h) During construction for any project phase, all agricultural drains under the impacted project areas are to be removed or abandoned in place to eliminate the potential for the drains to act as contamination conduits. All drains should be eliminated at project build-out. All plans for relocation or removal of agricultural drains should be approved by the RWQCB.	
4.4.2-3 An inadequate wastewater sludge treatment and disposal system could adversely impact water resources and public health due to release of untreated wastewater solids to local surface waters.	4.4.2-3(a) The applicant should investigate potential beneficial uses for the wastewater treatment sludge and thoroughly evaluate the feasibility of implementing one or more of these options in the Specific Plan.	I
	4.4.2-3(b) If disposal of wastewater treatment sludge at the Vasco Road landfill were one of the options identified during the evaluation, an executed contract with the landfill should be provided in the Specific Plan this alternative should be included and discussed in the Specific Plan. The feasibility and necessary permit requirements should be discussed in detail.	
	4.4.2-3(c) Sludge drying beds should be designed and constructed to meet the requirements in Title 26, Division 23, Chapter 3, Subchapter 15 of the California Code of Regulations.	
	4.4.2-3(d) A pretreatment program designed to regulate non-domestic wastewater discharges into the sanitary sewer should be considered in developing the Specific Plan.	
4.4.2-4 An uncontrolled release of hazardous materials would be possible with wastewater treatment practices and could impact water resources and public health.	4.4.2-4(a) A preliminary Hazardous Materials Business Plan should be developed to address material stored, used, and generated by the proposed wastewater treatment plant. This Plan should be included as part of the project's Specific Plan.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.4.2-4(b) Prior to design of the wastewater treatment plant, chemicals for wastewater treatment operations should be carefully selected to minimize the potential for risk of upset. The selected chemicals should be identified in the Specific Plan. The chemical handling and storage facilities in the wastewater treatment plant should be designed to provide secondary containment and safety features to minimize and effectively mitigate accidental releases.	
■ PUBLIC UTILITIES/Storm Drainage		
4.4.3-1 The storm water discharges into Mountain House Creek and Old River could contain pollutants that may adversely impact the beneficial uses of Old River.	4.4.3-1(a) The project applicant must submit an NPDES permit application for storm water discharge associated with an industrial activity to the RWQCB, Central Valley Region, at least 30 days prior to the commencement of construction and comply with all requirements specified in the NPDES permit. This submittal should be addressed in the Specific Plan.	I
	4.4.3-1(b) The storm water collection system should be designed and constructed to prevent erosion and minimize pollutant loading. This system should be described in the Specific Plan.	
	4.4.3-1(c) The Community Services District for the proposed project should prepare and implement a Best Management Plan to: 1) prevent non-storm water from entering the storm water collection system; 2) minimize the discharge of pollutants into the storm water collection system, and, 3) prepare for prompt and effective response to accidental spills into the storm drain system. This plan should be developed as part of the project's Specific Plan.	
	4.4.3-1(d) An emergency response plan should be prepared for the project to provide immediate and effective containment and cleanup response to accidental spills and illegal dumping of materials into the storm drain system. The emergency response plan should be approved by the San Joaquin County Office of Emergency Services prior to project construction.	
4.4.3-2 The modifications proposed for Mountain House Creek could damage the existing riparian habitat or prevent the establishment of a healthy riparian habitat.	4.4.3-2(a) The applicant must apply for and comply with a Streambed Alteration Agreement from the California Department of Fish and Game (CDFG).	
	4.4.3-2(b) Streambed modification and riparian vegetation proposals should be prepared at the Specific Plan stage and should be subject to approval by the County and CDFG.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.4.3-3 The volume and rate of runoff from the Mountain House New Town could cause excessive erosion and siltation of detention ponds, creeks, drainage channels, and Old River.	4.4.3-3(a) The operating budget of the Community Services District should be guaranteed to be sufficient for all maintenance functions necessary to operate the storm water collection system as intended. The budget should be addressed in the Specific Plan.	I
	4.4.3-3(b) The performance standards and design features of the inlets to detention ponds should be included in the Specific Plan. The design should allow for reduction in the velocity of the incoming water.	
	4.4.3-3(c) If two-stage detention ponds were used, the inflow channel for the upper stage (usually dry) should be constructed to prevent erosion, which may include a concrete low-flow channel or riprap, and should terminate at the edge of the lower stage (always wet). The design features and performance standards to prevent erosion should be provided in the Specific Plan.	
	4.4.3-3(d) Periodic removal of sediments from detention ponds should occur to restore the capacities and to minimize resuspension of sediments. Pond maintenance objectives, activities, and approximate frequencies should be described in the Specific Plan; a detailed description of maintenance activities should be incorporated into an Operations and Maintenance Manual for the storm water collection system.	
	4.4.3-3(e) If grading or construction activities were to occur during the winter months, local drainage and temporary detention ponds should be provided to trap sediment in the runoff prior to discharge to creeks, ditches, or Old River. These provisions should be addressed in the Specific Plan.	
4.4.3-4 The accumulation of floating debris and petroleum residual in detention ponds could create a nuisance condition (e.g., odors, mosquito infestation, and excessive algae growth) and cause adverse aesthetic effects.	4.4.3-4(a) Surface barriers near the inlets to detention ponds should be considered to contain floating debris and residual hydrocarbon within a small area of the basins to allow for easier cleanup. The performance standards and design features to achieve containment should be included in the Specific Plan.	I
	4.4.3-4(b) Landscaping in and around detention ponds should be maintained free from litter and in healthy condition. To the extent feasible, native drought tolerant plants should be used. Landscaping plans and maintenance activities should be described in the Specific Plan.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.4.3-4(c) Equipment for removing floating debris and cleaning up petroleum products from the basins should always be available within the project site. Description of the equipment and other necessary materials should be provided in the Specific Plan.	
	4.4.3-4(d) Frequent inspection of detention ponds (e.g., daily during rain storms, weekly during dry periods) should be conducted and the findings recorded. Inspection objectives, types of activities, approximate frequencies of inspections, and recordkeeping plans should be included in the Specific Plan; a detailed description of inspection activities should be incorporated into an Operations and Maintenance Manual for the storm water collection system.	
	4.4.3-4(e) Adequate access should be ensured for maintenance of all detention basins. Pond layouts should be provided in the Specific Plan.	
4.4.3-5 Construction of the proposed project in phases could interfere with the operations of BBID's water distribution canals, agricultural tile drains, and surface drainage channels.	4.4.3-5 The development should be designed and constructed such that BBID operations are not interrupted. The Specific Plan should address how this is to be accomplished.	I
4.4.4-1 The proposed land use plan appears to violate PG&E restrictions for uses within electrical transmission line and natural gas pipeline easements and does not provide adequate corridors for planned utility easements.	4.4.4-1(a) The applicant should formally apply to PG&E to relocate and underground the Weber-Herdlyn 60 kV electrical transmission line. A preliminary response and cost estimate from PG&E should be secured and documented in the Specific Plan.	I
	4.4.4-1(b) The applicant should formally apply to PG&E to relocate the eight-inch natural gas pipeline. A preliminary response and cost estimate from PG&E should be secured and documented in the Specific Plan.	
	4.4.4-1(c) An adequate open space corridor or appropriate land use plan which meets PG&E approval should be provided for the Rio Oso-Tesla and proposed Rancho Seco-Tesla transmission line corridors (see Section 4.12, Public Health and Safety section of this DEIR). PG&E's approval should be secured and documented in the Specific Plan.	
	4.4.4-1(d) Development within electrical overhead transmission easements must not restrict access to the towers or interfere with the tower footings or wires, and must receive prior approval from PG&E. Development in easements associated with buried pipelines should not disturb soil cover over the pipelines, and must receive prior approval from PG&E or other owners of easements.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.4.4-1(e) The applicant should submit construction plans to PG&E for review. In particular, the proposed land uses in PG&E easements and movement of heavy machinery over the Line No. 2 gas pipeline should be addressed. PG&E's approval should be secured and documented in the Specific Plan.	
4.4.4-2 The project would have a significant energy demand and would contribute to the depletion of non-renewable resources and the demand for environmentally detrimental renewable resources such as hydroelectric power.	4.4.4-2(a) Streets in residential areas should be aligned to maximize the number of houses with southern exposures to facilitate the use of solar energy. Lots along these streets should be of an adequate width to promote south-facing orientation of units and maximum south-facing roof areas for solar collectors. Street, lot, and residential unit design to promote the use of solar energy should be addressed in the Specific Plan.	I
	4.4.4-2(b) The Specific Plan should state how conformance with the Solar Rights Act of 1987 and Solar Shade Control Act of 1987 would be achieved. Details on how the acts would be implemented should be addressed during the Tentative Map phase.	
	4.4.4-2(c) The Specific Plan should assess the feasibility of incorporating solar water heating systems for residential, commercial, and industrial buildings.	
	4.4.4-2(d) Residences with common walls should be incorporated into the project to the extent practicable to minimize heat loss from units. Inclusion of such units should be addressed in the Specific Plan.	
	4.4.4-2(e) Shade trees should be provided on the west side of buildings to reduce cooling demands during the summer and to provide windbreaks during cooler months. Landscaping standards should be established in the Specific Plan.	
	4.4.4-2(f) Shade trees should be provided in parking lots that would not block winter sunlight from reaching nearby buildings. At least 70 percent of the parking stalls should be shaded between 10 a.m. and 2 p.m. Such shading would reduce the use of air conditioning in automobiles and heat buildup associated with asphalt. Landscaping standards should be established in the Specific Plan.	
	4.4.4-2(g) Landscaping along roads should be incorporated into the project design to minimize heat buildup associated with asphalt. Landscaping standards should be established in the Specific Plan.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.4.4-2(h) The new town should maximize the use of alternative energy and ensure that the most energy efficient equipment and designs are used. The Specific Plan should assess the feasibility of using alternative sources of energy, including wind power for the new town. The Specific Plan should also state how energy efficiency will be ensured for the proposed project.	
■ CULTURAL RESOURCES		
4.5-1 Development of the project could disturb subsurface prehistoric cultural deposits or artifacts related to the prehistoric setting or historic archaeological deposits or features dating from the establishment of Euro-American settlement in San Joaquin County.	4.5-1(a) When specific land use and development plans are formulated as part of the Specific Plan, additional archaeological surveys should be conducted in areas of specific development impact that have not been subjected to intensive archaeological reconnaissance.	I
	4.5-1(b) Because of the possibility that a buried site, Ca-SJo-136, may be located in the vicinity of Mountain House Creek, construction activity in the Mountain House Creek area should be monitored by an archaeologist.	
	4.5-1(c) Because of the potential historic significance of Ca-SJo-229H, the site of the village of Wicklund, and because of the potential for buried features or artifact deposits, an archaeologist should monitor any construction work in the area of this site.	
	4.5-1(d) If, during the course of construction, subsurface historic archaeological features were identified on sites Ca-SJo-230H and Ca-SJo-231H or anywhere within the project site, excavation should cease and an archaeologist should be contacted to evaluate these materials.	
	4.5-1(e) If, during the course of any construction activity, buried prehistoric cultural resources are found, excavation should cease and an archaeologist should be contacted immediately to evaluate these resources. Such evaluation may entail archaeological test excavation and/or mitigative data recovery.	
4.5-2 Development of the proposed project could disturb previously unknown human prehistoric burial sites.	4.5-2 The County Coroner, the Native American Heritage Commission, and an archaeologist should be informed and consulted if a human prehistoric burial site were discovered. An agreement should be formulated between the Native American representative, the archaeologist, San Joaquin County, and the developer with regard to the proper treatment and disposition of human remains and associated artifacts in the Specific Plan. Such treatment and disposition may require archaeological excavation and reburial.	I

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.5-3 The proposed project could destroy historic structures over 50 years of age.	4.5-3 When specific land use information and detailed infrastructure planning is presented as part of the Specific Plan, a determination should be made as to whether any of the structures or structural complexes described in this DEIR would be impacted. All such structures should be evaluated by an architectural historian. After evaluations are made and if any adverse impacts are identified, mitigation measures should be suggested and followed. Such mitigation might consist of avoidance of impacts, detailed architectural documentation and history, or removal of a building to another location.	I
4.5-4 The proposed project could impact the route of the projected DeAnza Trail, a National Historic Trail.	4.5-4 The applicant should stay in contact with the National Park Service with regard to the development of its comprehensive plan for the DeAnza Trail. If the commemorative trail will pass through the project site, the Mountain House Specific Plan should incorporate the DeAnza trail using historic markers along the route and, preferably, develop a multi-use recreational and historic interpretive trail which would incorporate the projected route of the DeAnza Trail.	I
■ GEOLOGY, SOILS, AND SEISMICITY		
4.6-1 Soils exposed during grading and project construction could be subject to excessive erosion.	4.6-1(a) The applicant should develop erosion and sediment control standards for the proposed project and submit the standards to the San Joaquin County Department of Public Works for review and approval prior to approval of the Specific Plan. Prior to any on-site construction, an erosion and sediment control plan for each individual construction project should be developed by the project engineer and submitted to the San Joaquin County Department of Public Works for review and approval. The plan should comply with requirements of the San Joaquin County Grading Ordinance and the National Pollutant Discharge Elimination System non-point-source reduction programs, as a minimum.	I
	4.6-1(b) Excavation of creek channels would require permits by the California Department of Fish and Game. These permits would ensure protection of water quality by requiring minimization of sedimentation.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.6-2 Surface soils with high shrink/swell potential could cause damage to building foundations and paved surfaces.	4.6-2 Prior to development approval of the Specific Plan, a detailed preliminary geotechnical investigation of on-site soils should be conducted. This investigation should identify soils with high shrink/swell potential and recommend appropriate foundations and pavement subgrade treatment. Detailed geotechnical investigations would be required at the Tentative Map stage.	I
4.6-3 Settlement may occur if loads (fill and/or structures) are placed over the low-density clays along Old River.	4.6-3 Areas underlain by low-density clays should be left as open space, or alternatively, building foundations should be designed to minimize potential settlement.	I
4.6-4 Levee failure along Old River and the Delta-Mendota Canal could be caused by moderate to strong groundshaking during an earthquake.	4.6-4 Levees should be upgraded to meet engineering standards to ensure structural integrity under the anticipated maximum ground acceleration of 0.5g. A feasibility study to determine the cost of levee reconstruction and to examine alternatives, such as setting aside open space in the levee failure flood zone, should be completed prior to development of the Specific Plan.	I
4.6-5 Liquefaction could cause foundation failure in areas underlain by saturated sandy sediments.	4.6-5 A detailed geotechnical investigation should be conducted prior to development of the Specific Plan to determine areas that may be susceptible to liquefaction. The report should recommend design criteria for construction in these areas. Development in areas identified as susceptible to liquefaction should be limited to open space or very-low-density development. All structures, roads, and utility lines proposed in these areas should follow design criteria that reduce potential liquefaction impacts. Unless these areas are reserved for open space, the impacts associated with liquefaction would remain potentially significant.	I
4.6-6 Strong groundshaking during an earthquake could cause structural damage to improvements and injuries to residents of the proposed project.	4.6-6(a) The potential hazards associated with building collapse and infrastructure disruption due to seismic activity cannot be fully mitigated.	SU
	4.6-6(b) Project residents and workers should be made aware of the seismic hazards associated with the area and informed of ways to reduce these hazards. The project applicant should develop and implement a community earthquake preparedness plan, to assist in the goal of community education.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ HYDROLOGY AND WATER QUALITY		
4.7-1 Proposed structures and facilities on the project site could be inundated by potential flooding within the 100-year floodplain.	4.7-1(a) The levees protecting the project site should all be thoroughly inspected, evaluated, and improved, as necessary, prior to any development within the portion of the site currently designated as a 100-year flood zone. The evaluation of the levee should be performed by a certified engineering geologist or registered geotechnical engineer prior to completion approval of the Specific Plan. All recommendations presented for levee design and improvements by the professionals should be implemented following review and approval by the San Joaquin County Flood Control Engineer. The review would be conducted under the FEMA requirements for the "Letter of Map Revision" process. Areas currently within the 100-year flood zone cannot be rezoned until this area has been taken out of the flood zone. Prior to the Specific Plan, the applicant should apply for and receive a "Conditional Letter of Map Revision" for proposed levee improvements. All levee work must be completed and approved and a "Letter of Map Revision" must be issued prior to any construction within the currently identified flood zone.	I
	4.7-1(b) Regular inspection and maintenance of the levee should be performed to identify and correct any conditions that would destabilize the structure. The levee should be inspected semi-annually by the Community Services District (CSD) for the Mountain House New Town. The semi-annual inspections of the levee should specifically document evidence of erosion on the river side of the levee, excessive seepage on the landward slope (particularly at the toe of the slope), rodent burrows, and levee crest subsidence. Identified problems should be corrected immediately by the CSD.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.7-2 Increased runoff within the watershed and channel modification of Mountain House Creek could result in increased erosion.	4.7-2 Although the applicant has presented preliminary design measures to reduce the erosion hazards, a specific channel design and maintenance plan should be prepared and presented in the Specific Plan. The specific channel design should incorporate riparian vegetation to the greatest extent possible. The design measures should also provide for protection of and any necessary improvements to existing culverts and stream crossings within the drainage system. The use of pervious pavements should be incorporated into the design of parking and pedestrian areas to increase infiltration of storm water runoff. The design and maintenance plan should present specific channel maintenance procedures and schedules to be implemented by the Community Services District to protect the channel and associated structures during and after the development of the project. The channel design and maintenance plan should be reviewed and be subject to the approval of the San Joaquin Flood Control Engineer.	I
4.7-3 Increased sedimentation in the proposed wetland area at the terminus of Mountain House Creek and within Old River would be caused by runoff from Mountain House Creek and operation of the proposed marina.	4.7-3(a) Sediment discharge to Mountain House Creek should be controlled. Appropriate control of erosion within the project area, which would contribute to the sediment load, was discussed in Mitigation Measure 4.7-2. The discharge of sediment to Old River should also be minimized by causing sediment deposition to occur in areas within the Mountain House Creek channel. The Mountain House Creek channel should be enlarged upstream of the wetlands area to reduce flow velocities and cause sediment deposition. An appropriate channel design should be required as part of the Specific Plan and subject to review and approval by the San Joaquin Flood Control Engineer.	I
	4.7-3(b) As part of the Specific Plan, a dredging plan should be developed for removal of accumulated sediment from the Old River channel in the area of the proposed marina outlet. This plan should be subject to the requirements of dredging permits issued by the U.S. Army Corps of Engineers and should have provisions for controlling turbidity during dredging. The use of silt curtains in the dredging area to capture sediments should be addressed in the dredging plan.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.7-3(c) Prior to obtaining a dredging permit, a disposal area for the dredged sediments should be established by the applicant and approved by the Central Valley Regional Water Quality Control Board. The disposal area should be identified in the recommended dredging plan. The characteristics and design of the dredge disposal area should minimize the potential discharge of sediments to surface water and potential discharge of contaminants to the surface water or groundwater. A sampling plan to evaluate the potential levels of contaminants within the sediments should be incorporated in the recommended dredging plan. The collected samples should as a minimum, be analyzed for trace metals, salts, pesticides, and herbicides.	
4.7-4 Inadequate water circulation would potentially create water quality problems within the proposed on-site marina.	4.7-4(a) Circulation within the proposed marina should be adequate to reduce the potential for algal growth. A forced circulation system could pump water from Old River to the marina to mitigate thermal stratification and stagnation within the marina. A system capable of pumping 25 cfs would reduce water residence time in the marina to less than five days and reduce the potential for algal blooms (Appendix 10.12). A pipeline right-of-way from Old River to the southern portion of the marina would be needed to operate the recommended forced circulation system.	I
	4.7-4(b) Operation of the forced circulation system should be made contingent on water temperature monitoring within the marina.	
4.7-5 Water quality in Old River could be impacted by increased turbidity caused during construction of the proposed marina.	4.7-5 The impact of construction activities at the marina could be mitigated by completing as much excavation and levee construction as possible prior to breaching the Old River levee. During levee breaching, a silt curtain should be installed within Old River to trap sediment carried into the river from the marina area.	I
4.7-6 Ultimate development of the project site could cause a rise in shallow groundwater levels as a result of removal of subsurface drains.	4.7-6 The design of building foundations and pavements should consider the potential for adverse soil conditions caused by high groundwater levels. The designs should provide adequate drainage and require appropriate bearing capacities for proposed structures. The building, foundation, and pavement designs would be subject to review and approval by the San Joaquin County Building Department.	I
4.7-7 Discharge of treated or untreated wastewater from the proposed project to Old River could result in degradation of water quality within the River and South Delta waterways system.	4.7-7(a) Additional on-site reclamation opportunities should be implemented to reduce the potential need for wastewater discharge to Old River.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.7-7(b) An off-site reclamation system should be developed that is sized to meet as much wastewater as possible up to the entire annual flow. Such a system should be identified in the Specific Plan for the project.	
	4.7-7(c) If wastewater discharge were required, an application for the proposed discharge should be submitted for consideration by the Central Valley Regional Water Quality Control Board prior to project construction. The RWQCB should consider the potential near-field and far-field impacts on water quality and potential future changes in the South Delta waterways circulation system.	
4.7-8 Increased boating within Old River and the South Delta waterways, expected as the result of the operation of the proposed marina would contribute to the erosion of levees by waves generated as boat wakes.	4.7-8(a) The design of the levee improvements recommended in Mitigation Measure 4.7-1 should consider and mitigate the potential for all potential causes of erosion, including boat wakes. Possible design components for the prevention of erosion would include rock revetment structures, such as rip-rap. Specific design components for the erosion abatement should be required by the San Joaquin County Flood Control Engineer as a condition of levee design approval.	I
	4.7-8(b) To mitigate the impact of boat wakes on the stability of levees outside the control of the project, boat speed limits to reduce the generation of potentially damaging boat wakes should be established and enforced by the San Joaquin County Sheriff's Department, Boating Safety Division, in conjunction with other Delta area law enforcement agencies.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ VISUAL QUALITY		
4.8-1 The proposed project would replace a 4,667-acre agricultural portion of San Joaquin County with a built environment, and would significantly alter the existing rural visual quality of the site as seen from local roads.	4.8-1(a) A major visual setback should be provided to maintain an agricultural gateway to San Joaquin County for motorists driving along I-205. Development south of Grant Line Road could be limited to a band extending approximately 3,000 feet south of the road (Figure 4.8-10). Development within this band should also be screened by a continuous row of evergreen trees at the southern end of the development. A permanent open space easement could be acquired to protect this southern portion of the project site that would be visible from I-205 (Figure 4.8-10). This development setback would also have the added benefit of reducing noise impacts from I-205. The applicant could purchase a conservation easement (i.e., voluntary restriction of land use to agricultural purposes) using the San Joaquin Open Space and Farmland Trust. The land could remain in private ownership and agricultural production, with deed restrictions to prevent future development.	I
	4.8-1(b) The Specific Plan should identify all techniques proposed to minimize the visibility of urban development south of Grant Line Road. Such techniques could include building setbacks, landscape screening, use of berms, fencing, and low building heights.	
	4.8-1(c) To maintain the rural character of the surroundings, additional landscaping with evergreen trees should occur along the existing major roads, which include Patterson Pass Road, Byron Road, and Grant Line Road (Figure 4.8-10). These trees should be planted so that the canopies of the trees touch one another at maturity and form a solid edge along the roads.	
	4.8-1(d) Additional screening by trees should be provided along Old River and a small waterway adjoining Old River at the site's northeast corner (Figure 4.8-10). Along Old River, the landscaped area should be planted with species of trees and shrubs compatible with existing riparian vegetation. Species should also be chosen to provide effective screening so that the public using the levees for walking or bicycling would have a limited view of development on site. Similarly, at the small waterway, riparian landscaping should be provided.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.8-1(e) Landscaping plans should be clearly identified in the Specific Plan for both existing and proposed roadways. Such plans should be used by a design review committee established for this project and responsible for design review prior to construction.	
	4.8-1(f) The Specific Plan should include a comprehensive sign program for the proposed C-FS district which would limit pole signs to a single identifying sign for the FS area; height and size restrictions should be imposed where feasible to lessen the visual impact.	
4.8-2 Views from public roads toward Mt. Diablo and the Mt. Diablo foothills to the west of the site would be screened by new buildings.	4.8-2(a) View corridors towards the foothills and Mt. Diablo should be protected and enhanced by the incorporation of east-west vehicle and pedestrian corridors throughout the project site. These corridors should be landscaped with trees to frame views to the west, and should be at least 40 feet wide to allow open views (Figure 4.8-10).	I
	4.8-2(b) An open space corridor along the project's western edge should be incorporated into the project. Although access should be controlled to minimize trespassing onto adjacent agricultural lands, this area could provide significant views of the hills without the interruption of buildings (Figure 4.8-10).	
	4.8-2(c) Sign regulation should occur as discussed under Mitigation Measure 4.8-1(f).	
4.8-3 Industrial buildings along major view corridors could be as tall as 100 feet. Such buildings would create a dominant visual feature in areas that: 1) are not intended as the commercial centers of the project; 2) would contrast significantly with adjoining agricultural lands; and 3) would severely limit views for the motorist. Residential areas proposed adjacent to on-site open space would allow buildings up to 76 feet in height, which would create a strong visual contrast to the open space and also generate long shadows.	4.8-3(a) The maximum allowable height limit for industrial areas should be reduced to 45 feet or less to prevent this land use from being a dominant visual feature of the proposed project, especially when adjacent to residential neighborhoods or open space (Figure 4.8-11).	I
	4.8-3(b) Industrial buildings should be set back at least 30 to 40 feet from roadways and should incorporate evergreen tree cover adjacent to the roads, especially when adjacent to agricultural lands.	

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.8-3(c) Industrial buildings adjacent to residential neighborhoods should be set back at least 100 feet from residential lots. Evergreen tree cover should screen industrial buildings from residences.	
	4.8-3(d) The Medium-High Density Residential area proposed adjacent to the marina should have a height limit of 40 feet or less.	
	4.8-3(e) The High Density and Medium-High Density Residential areas just west of the open space corridor on the north side of Byron Road should have a height limit of 40 feet or less.	
4.8-4 Project development could result in the removal of mature trees currently visible from public roads, which frame views along these roads.	4.8-4(a) Any required road widening should include protection of mature trees. For example, when trees are located along the west side (e.g., Patterson Pass Road) or south side (e.g., Grant Line Road), the area used for road widening should be the east or north sides, respectively.	I
	4.8-4(b) The Specific Plan should include mapping of all mature on-site trees visible from existing and proposed roads. Provisions to protect existing mature trees, except those that may be unsafe due to age or overall conditions , should be included in the Plan.	
4.8-5 The project could generate light and glare which would be visible from major roads, residences within the project, and residences outside the project.	4.8-5 The Specific Plan should include specific descriptions of how light and glare from the project would be minimized. Mechanisms such as screening of parking areas with evergreen trees, setbacks from residential neighborhoods adjacent to commercial areas, and a design review process should be included in the Specific Plan. The design review process should include review of lighting proposals and architectural materials. A design review committee made up of both architects and landscape architects should oversee the design review process.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ FISCAL IMPACTS		
4.9-1 The proposed project may require more in General Fund-financed service expenditures than generated in General Fund revenues. The imbalance of expenditures over revenues could occur if non-residential land uses develop more slowly than anticipated by the applicant.	4.9-1(a) The County should monitor demand for new services and revenue generation during buildout of the New Town to assure that expenditures are offset by new revenues. As the basis of this monitoring activity, the net fiscal benefit of the project to the County should be estimated annually through, and after, buildout. Depending upon the results of the monitoring, adjustments can be made in service delivery, fees and charges, and/or use of other financing mechanisms. Such adjustments should be adequate to offset costs as necessary and should be a mandatory condition of development approval.	I
	4.9-1(b) Because of the uncertainty regarding market acceptance of the proposed project, and therefore of its buildout schedule, the County should require that alternative financing/management entities be in place as early as possible to ensure that the project does not siphon General Fund revenues that are needed for other programs. Potential entities include a Mello-Roos Community Facilities District, which could also be used to fund capital improvements, or a Community Services District as proposed by the project applicant. Specific entities should be chosen at the Specific Plan stage of project approval.	
	4.9-1(c) Property tax revenue, along with other revenue sources available to the County for general purposes, would only be used to support existing countywide services. Urban services and higher levels of County services, as required to be provided to the proposed project by the County General Plan or other mitigation measures included in this DEIR, would be funded through project-specific special taxes and/or assessments levied by local special districts. Reallocation of the County's property tax base is limited by State statutes regulating property tax allocation (e.g., Revenue and Taxation Code, section 99). These statutes provide that a reallocation of property tax occurs only insofar as services funded by County property taxes are transferred to Mountain House special districts.	

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ FINANCIAL IMPACTS		
<p>4.10-1 The capital facilities required by the proposed project may prove too expensive for some project-area homeowners to adequately finance.</p>	<p>4.10-1(a) The Specific Plan for the proposed project should include the following goals: 1) ensure that adequate funding sources have been identified for financing all necessary capital improvements, and 2) provide an equitable and nonburdensome means of sharing the costs of project-related improvements between all parties benefitting from the improvements. These goals should guide the formulation of the financing plan to be included in the Specific Plan. The financing plan should explicitly incorporate the following factors:</p> <ul style="list-style-type: none"> • <u>The actual cost of facilities required.</u> The cost estimates provided for this DEIR are likely to change as the proposed project becomes more refined at the Specific Plan stage. The applicant, as well as all service providers, would need to provide accurate and detailed infrastructure costs to be incorporated into the Specific Plan's financing plan. • <u>The allocation of costs.</u> An important task for the County Planning Division would be to allocate capital costs in an equitable manner, both to properties within the project site and to properties outside of the project site (conceivably, some capital costs, such as those relating to highway improvements, would benefit properties outside of the project site). This allocation of costs should be performed prior to formation of special districts to finance services/facilities for the proposed project and prior to the specification of impact fees (e.g., fees for transportation facilities) that would be needed to pay for capital improvements. • <u>Ability to pay.</u> The Specific Plan financing plan must ensure that capital cost burdens are reasonable and affordable for local property owners (i.e., the lien amount should not exceed 33 percent of the value of the property or property taxes and assessments should not exceed two percent of the property value). 	I
	<p>4.10-1(b) At the Specific Plan stage, the County should negotiate a development agreement that obtains dedications of lands for park development, for streets, and other on-site improvements, and for other municipal-type public facilities.</p>	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.10-1(c) Prior to commencement of development, the County should create a localized entity (or entities) within the project site to support public facility improvement financing and ongoing maintenance costs. Such entities include special assessment districts and Mello-Roos community facilities districts. Bonds issued under either type of district could represent an important source of revenues for infrastructure construction, contingency funds, and, in certain cases, ongoing maintenance activities.</p>	
■ POPULATION, HOUSING, AND EMPLOYMENT		
<p>4.11-1 The proposed project is unlikely to attain a balance between jobs and housing, and would exacerbate the imbalance between jobs and housing that currently exists in both the Tracy Planning Area and San Joaquin County.</p>	<p>4.11-1 A program should be formulated that ties residential development to job growth within the community. The goal of the program would result in a ratio of one employed resident per job. Monitoring of the impact mitigation program would require a report that evaluates the jobs housing balance within the community, both as a ratio and with regard to affordability issues. The applicant(s) in cooperation with the San Joaquin County Community Development Department could be responsible for preparing the report and for ensuring compliance with the policy that the proposed project attain a jobs housing balance. A schedule for the report can be included in the Specific Plan. The Public Services and Facilities Plan shall include a Jobs/Housing Program and Monitoring Plan. The program should include specific actions to promote and secure jobs within the community. Goals of the program should include, but not be limited to:</p> <ul style="list-style-type: none"> • Achievement of a ratio of one "in community" job for every employed community resident at buildout of the community, with substantial employment progress throughout the entire development period. • Maximization of working community residents employed within the community. • An aggressive marketing program to attract jobs. 	I

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<ul style="list-style-type: none"> A policy of land use allocation that would optimize fulfillment of the first three policies. <p>The Monitoring Plan should consist of annual reports of statistical data of the community's employment, population, land use allocations, and other data necessary to measure the recommended changes in the Jobs/Housing program. Changes or modifications in the program may be mandated by the County after any particular annual review to ensure that the goals of the program are being fulfilled.</p>	
4.11-2 The proposed project may not have a sufficient supply of housing that is affordable to workers employed in the community.	4.11-2(a) Each phase of development should be required to include a sufficient quantity of housing that is affordable to workers employed in the community. The necessary quantity and price ranges of this housing should be determined prior to the approval of each phase of development. Overall, a minimum target for affordable units or 25 percent of total residential units should be achieved. Monitoring of the impact mitigation program would require a report that evaluates housing affordability for persons employed within the community. The applicant(s) in cooperation with the San Joaquin County Community Development Department should be responsible for preparing the report and for ensuring compliance with the policy that the proposed project attain a jobs-housing balance.	I
	4.11-2(b) Some of the projected shortfalls in affordable housing could be eliminated through the construction of more multi-family rental housing as replacement for some of the excess housing in the less affordable range. Housing for low and very-low income households, however, may require some form of subsidy to ensure its development.	
4.11-3 The least-expensive housing proposed for development at the project site may not be affordable for low-income residents of San Joaquin County.	4.11-3 The County should develop guidelines for an affordable housing plan for new communities. This plan should be part of the required Specific Plan and should be geared towards the unique housing mix requirements of a new town. It should be sensitive to the long term housing needs of the community. For example, even if there is no retirement housing planned initially, long term residents may create that demand in 20 years or so.	I
4.11-4 The proposed project would capture demand for some residential and nonresidential land uses that would otherwise go to the City of Tracy.	4.11-4 The reduction of population and employment growth in Tracy that results from implementation of the proposed project cannot be mitigated unless the project is denied, or the project becomes part of the City of Tracy.	SU

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ PUBLIC HEALTH AND SAFETY		
4.12-1 Potential past or future releases of fuel products from storage tanks and/or pipelines may result in environmental degradation and public health hazards.	4.12-1(a) Preliminary site assessments, in accordance with the requirements of the County Environmental Health Department, should be undertaken by a qualified professional in areas of known or suspected fuel releases, prior to development.	I
	4.12-1(b) Any contamination identified by the preliminary assessments should be investigated and remediated, if required, prior to construction to reduce potential exposure of construction workers and the public to hazardous materials and to prevent further environmental degradation. Remediation of soils could include excavation and on- or off-site treatment or disposal or in-place treatment of the affected soils.	
	4.12-1(c) If the groundwater had been affected by fuel releases, remediation could be required. Such remediation could include: groundwater extraction and treatment; disposal of the treated water to surface waters; or reinjection into the groundwater. Extraction of groundwater without reinjection could affect the water resource supplies in the area.	
	4.12-1(d) The location of all existing and abandoned fuel lines should be established in the Specific Plan so that any required setbacks can be incorporated. Prior to construction near the existing and abandoned buried fuel lines, the location of the lines should be accurately further established (e.g., accurate maps from the owner and/or operator or geophysical surveys).	
	4.12-1(e) All construction near the existing or abandoned fuel lines should be undertaken following a site-specific health and safety plan to protect the welfare of the workers. If contamination were identified, investigation and remediation should be undertaken in accordance with the requirements of the County and the Regional Water Quality Control Board.	
	4.12-1(f) Construction at the locations of aboveground fuel storage tanks should occur in accordance with site-specific health and safety plans unless it has been previously determined that releases have not occurred from the operation of the tanks. Such determination could be made by inspection of the tanks and/or soil sampling under or near the tanks.	
	4.12-1(g) The applicant should obtain the approval of owners of buried fuel pipelines that cross the project site for construction and development plans.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.12-2 Public and environmental health may be affected by potential historic pesticide and/or herbicide residues in the environment.	4.12-2(a) A preliminary assessment of the presence of chemical residues from pesticide and herbicide use should be completed by a qualified professional prior to approval of the Specific Plan.	I
	4.12-2(b) Specific areas where pesticides and herbicides were stored, handled, or disposed of should be investigated prior to development of the Specific Plan for the construction at the project site.	
	4.12-2(c) If chemicals were detected at concentrations that could pose a risk to the environment, remediation of the affected areas should be undertaken prior to project construction. Remediation should be conducted in accordance with the requirements of either the California Department of Toxic Substances Control and/or the Regional Water Quality Control Board. Remediation could include soils removed to a permitted landfill, on-site treatment and on- or off-site disposal, or placement of affected soils in areas that would not provide exposure to users of the site.	
	4.12-2(d) Pesticide- and herbicide-containing soils (with concentrations in excess of regulatory action levels) should not be placed or exposed in residential development areas where residents could be exposed to the chemicals through ingestion, inhalation, or skin contact.	
	4.12-2(e) Following grading activities in residential areas, the applicant should demonstrate to the County that exposed soils do not contain pesticides or herbicides in excess of regulatory action levels.	
	4.12-2(f) To reduce the potentially adverse effects of aerial pesticide spraying on the health of residents and employees of the project site, a 1,000-foot wide buffer zone should be established along the western site boundary or aerial spraying shall be restricted.	
4.12-3 The surface water and groundwater may have been affected by past agricultural uses on and adjacent to the site, which could affect future users of the site. These waters could continue to be affected by on-site dairy operations until Phases III and IV of the proposed project.	4.12-3(a) For those areas on the project site supporting livestock, livestock waste management controls should be established to control runoff. Such controls could include limiting livestock access to surface water and containerizing the wastes to prevent leaching to the groundwater.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.12-3(b) Any domestic or irrigation wells that are not in use, or do not have effective sanitary seals, should be abandoned prior to project construction to prevent the wells from acting as conduits for contaminants migrating from the surface to the groundwater.	
4.12-4 Soil and water may be contaminated from heavy metals and oil-based compounds remaining from abandoned natural gas well drilling muds and could affect future users of the site.	4.12-4 The area within a 200-foot radius of each of the five abandoned natural gas well heads within the project site (Figure 4.12-1) should be investigated by a qualified professional to determine if the drilling muds are present and, if so, whether concentrations of heavy metals and oil-based compounds are present at concentrations that may affect public and environmental health. If the muds contain concentrations of chemicals above regulatory action levels, the drilling muds and any adjacent affected soil should be removed and/or remediated in accordance with regulatory requirements. The investigation should occur prior to development of the Specific Plan tentative approval of any development permits . Removal and/or remediation of contaminated soils should occur prior to project construction in the vicinity of the well heads.	I
4.12-5 Potential health impacts may result from public exposure to PCBs associated with transformers or electromagnetic fields associated with overhead electrical lines.	4.12-5(a) The applicant should request information from PG&E on the presence of any transformers containing PCBs , and any records of spills from such equipment. If PCB-containing equipment (50 to 500 parts per million PCBs in the oil) or PCB equipment (over 500 parts per million) were identified, this equipment should be replaced with non-PCB containing equipment. Any identified spill areas should be evaluated for cleanup. The applicant would be responsible for the costs of testing and replacing PCB-containing transformers.	I
	4.12-5(b) The applicant should request information from PG&E on the calculated strengths of the electric and magnetic fields generated by the Weber-Herdlyn and Rio Oso-Tesla lines, and the proposed Rancho Seco-Tesla line. Field strengths should be identified at the edges of the existing rights-of-way and at 50, 100 and 200 feet from the edges of the rights-of-way. Field strengths should be calculated for a range of loading conditions including average load and maximum anticipated load.	
	4.12-5(c) Land adjacent to transmission line easements should be planned for recreational use or open space, to the maximum extent possible. The applicant should continue to evaluate the field strength information for the existing and proposed transmission lines in light of new research findings to identify whether setback distances for structures intended for human occupancy would be appropriate.	
	4.12-5(d) The proposed high school and elementary school south of Grant Line Road and adjacent to existing and proposed electrical transmission line easements should be relocated. This relocation should be identified in the Specific Plan.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.12-5(e) The applicant should develop public informational material on the potential health problems caused by exposure to EMF from all sources, including overhead transmission lines. The public informational packet should include information about field strengths that could be experienced adjacent to the transmission line easements as developed in Mitigation Measure 4.12-5(b). The public informational packet should be provided to residents or occupants of structures located adjacent to the existing or proposed transmission line easements.	
	4.12-5(f) Any metal structures or objects located near transmission line easements should be grounded to avoid nuisance induction effects, such as shocks (experienced upon initial contact).	
4.12-6 Asbestos, if present in existing farm structures, could cause adverse health impacts to workers during renovation and/or demolition.	4.12-6 Structures that would be removed or renovated as part of the project should be screened or surveyed for the presence of asbestos-containing materials. If asbestos were present, renovation and/or demolition should be undertaken only by licensed asbestos abatement contractors trained in proper asbestos removal and disposal procedures.	I
4.12-7 Materials disposed of at the small household landfill on the site may have affected soil and groundwater quality.	4.12-7 The applicant should demonstrate that the disposed materials do not constitute a health or environmental hazard. Such demonstration could be achieved through removal of disposed material in conjunction with soil sampling and groundwater sampling.	I
4.12-8 The project could result in increased use, storage, and disposal of hazardous materials.	4.12-8 No mitigation measure would be required if applicable statutes and regulations were followed by businesses associated with the project.	I
4.12-9 Failure or overtopping of the levees along Old River and canals at the northern boundary of the project site could result in flooding, posing risks to human health and safety and property.	4.12-9 The applicant should prepare an Emergency Response Plan for the project which includes procedures for response to flooding events. The plan should present an emergency communication system, identify emergency coordinators, and establish evacuation procedures. The Emergency Response Plan should be reviewed and approved by the San Joaquin County Office of Emergency Services prior to approval of the Specific Plan.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.12-10 Open water bodies within the project site could provide active breeding sites for mosquitos, potentially causing an environmental nuisance condition and disease transmission.	4.12-10 The applicant should prepare and submit a mosquito abatement program as part of the Specific Plan. The program should identify expected and potential areas conducive to active breeding of mosquitoes. The program should present specific mosquito abatement techniques which would minimize potential degradation of water quality. The program should be submitted to the San Joaquin County Mosquito Abatement District for review and approval. The applicant should be responsible for implementation of the program.	I
4.12-11 The development of the project may increase the potential for public exposure to explosives, fire, or the release of materials during railway accidents on the railway line crossing the northern portion of the project site.	4.12-11 Businesses and public institutions located adjacent to the established buffer zone should maintain emergency contingency and evacuation plans for the event of a catastrophic accident.	SU

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ BIOLOGICAL RESOURCES		
4.13-1 Development of the proposed project would result in the elimination of all existing agricultural wildlife habitat, totaling approximately 4,270 acres. Some of this habitat is used by State and Federal protected wildlife species.	<p>4.13-1(a) The entire area north of Byron Road containing approximately 1,500 acres should be set aside as an agricultural preserve to be enhanced and managed for the Swainson's hawk and other protected wildlife species.</p> <p>Given the minimum mitigation bank foraging acreage to support one pair of Swainson's hawk (CDFG, 1990), preservation of this portion of the project site should adequately accommodate the one known pair that forages there, plus numerous other observed individuals. This latter group may have also included pairs which were not as easily recognized as the pair with contrasting color patterns. Support for this idea is given in the habitat conservation plan for this hawk in San Joaquin County which documents nine off-site Swainson's hawk nests or nesting pairs within 10 miles of the Byron Road-Old River segment of the project site (Jones & Stokes, 1990) (Figure 4.13-11). Ten miles is the accepted average foraging distance for one Swainson's hawk pair (CDFG, 1990).</p>	I
	<p>4.13-1(b) A management and enhancement plan should be developed and implemented for the recommended agricultural preserve (see Mitigation Measure 4.13-1a), which will ensure a highly productive foraging habitat in perpetuity for the Swainson's hawk. The management and enhancement plan should include the enhancement of the riparian zones of Old River and Mountain House Creek.</p>	
	<p>4.13-1(c) The recommended management and enhancement plan should seek to create agreements with the present and future owners whereby a guaranteed minimal acreage of alfalfa would always be in production. This guarantee would be accomplished by designing a master decade-by-decade alfalfa rotation plan to which all farm owners and operators must adhere. It would also specify what crops would be beneficial to hawks during the normal one-year soil reconditioning period between alfalfa rotations. Other provisions of the agreements would focus on the vegetation of irrigation ditch banks and the dedication of small segments of land throughout the area to fallow plots on which natural vegetation could develop.</p>	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.13-1(d) The management and enhancement plan should clearly state that rodenticides should be strictly prohibited along with the use of any wildlife "scare guns." Fire crackers and hunting should not be allowed. The final element of the recommended management and enhancement plan should be a monitoring program that would provide an annual written review submitted to the DFG for the first five years and thereafter every three to five years.	
	4.13-1(e) To confirm the presence of the San Joaquin kit fox, additional surveys should be undertaken during the first half of 1992 when the kit fox pups are active outside of the den. This survey should be conducted prior to approval of the Specific Plan. Results of the survey may conclude that on- or off-site mitigation would be required. If off-site mitigation is recommended, the land use map would not change. However, acquisition for off-site habitat should occur prior to adoption of the Specific Plan. If on-site mitigation is required, a General Plan amendment must be adopted prior to adopting the Specific Plan.	
	4.13-1(f) Alternative. In lieu of setting aside acreage on-site as described in 4.13-1(a) above, off-site mitigation could be considered, providing the new site meets the following criteria: 1) represents a wildlife corridor connecting the Byron-Marsh Creek area with the west Tracy area and containing alfalfa, irrigated pasture, and alkali sink in similar proportions to the project site; 2) abuts river/riparian zone; 3) contains feeding perches; 4) has roosting and nesting sites nearby; and 5) is undisturbed by noisy human activities. This area would be subject to the management and enhancement plan described above, but tailored to fit the specifics of the chosen site.	
4.13-2 The project would block the movement of most terrestrial species listed in Appendix 10.16 between the eastern base of the Altamont Hills and the Delta-farmland region to the east.	4.13-2(a) A wildlife corridor should be developed and maintained along the entire length of Mountain House Creek through the project site. The width of the corridor should be a minimum of 100 feet on each side of the creek measured from the upper edge of the bank centerline of the creek . The creek bed should be cleaned of silt and enhanced through the construction of occasional pool areas. The buffer zone should be planted with riparian vegetation, including native riparian trees such as Fremont cottonwood, sycamore, and willow.	I
	4.13-2(b) Hiking and bike paths for this area should be placed on the outer edge of the riparian zone, and human access into the zone should be discouraged through the use of unobstructive fencing and informative signs.	

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.13-2(c) Streets crossing this corridor should be minimized and designed to allow for free movement of wildlife which may use the corridor.	
	4.13-2(d) A habitat monitoring plan for the restored corridor should be developed and implemented for the first five years of its existence to ensure the successful establishment of the riparian vegetation complex and to assign responsibility for maintenance.	
4.13-3 Development of the project site would eliminate seasonal wetlands and periodic wetland areas such as irrigated pastures and drainage swales.	4.13-3(a) The 3.3-acre emergent wetland in the north area of the site should be preserved and expanded to approximately twice its current size to mitigate for the presumed loss of additional emergent wetland segments (approximately seven acres) resulting from the development of the acreage south of Byron Road. A qualified professional should oversee the preservation and enhancement project and be responsible for its maintenance. According to Section 404 of the Clean Water Act, the applicant would be required to obtain approval from the U.S. Army Corps of Engineers for any impacts on wetlands and a wetlands mitigation plan would be required.	I
	4.13-3(b) A specific proposal or design of the 40-acre wetland should be included in the Specific Plan, providing State and Federal wildlife agencies have approved of this concept.	
4.13-4 Construction and operation of the proposed 60-acre marina would impact the productive inshore zone and riparian edge habitat of Old River.	4.13-4(a) The proposed 60-acre marina should be eliminated in favor of a boat launch ramp and day use parking lot for the private use of the residents of the new community. Boats with motors exceeding 10 hp should not be permitted in this segment of the River. This facility could be fashioned along the lines of other San Joaquin County public use ramps and picnic areas such as those located off Manley Road in the Mossdale area and at the end of Dos Reis Road west of Lathrop. This would provide easy access to the Delta system for the residents of Mountain House New Town while at the same time eliminate many of the potential hazards to the Old River aquatic system caused by a marina operation.	I
	4.13-4(b) Signs should be posted restricting boat traffic and limiting boat speeds to 5 mph along the length of the project site fronting Old River.	
	4.13-4(c) Also refer to mitigation measures in Section 4.7, Hydrology and Water Quality.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.13-4(d) Prior to approval of the Specific Plan, a survey should be conducted along the banks of Old River extending the length of the project site to confirm the presence of the California hibiscus, a Federal candidate 2 species. This survey must be done in August and September, the plant's blooming period.	
	4.13-4(e) A survey should be conducted of Old River along the segment bordering the project site to confirm the presence or absence of the Delta smelt. The survey should be conducted with the use of an otter trawl at intervals during the spring spawning season and prior to approval of the Specific Plan. If the species were detected, policies and specific measures for its protection should be incorporated into the Specific Plan.	
■ TRANSPORTATION		
4.14-1 The Proposed Project Scenario would generate up to 249,000 daily vehicle trips to, from, or within the project site in 2010 assuming current rates of trip-making. The Market-Constraint Scenario would generate up to 177,000 daily vehicle trips to, from, or within the project site in 2010. With either project scenario, the added trips would contribute significantly to projected traffic growth, increases in vehicle miles traveled, and LOS deficiencies on the road system, particularly in the vicinity of the site. Some of these impacts would be unavoidable and significant. Specific facilities and locations of these impacts are described in subsequent impacts.	4.14-1(a) The County should prepare and implement a countywide Transportation Systems Management (TSM) program to promote and facilitate use of alternative modes to the single-occupant vehicle within the County. The program should include measures such as continuation and expansion of the County rideshare program, transportation coordinators at employment sites, provision of park-and-ride lots throughout the County, and development of a network of high occupancy vehicle (HOV) lanes.	SU
	4.14-1(b) The County should prepare and adopt a countywide Trip Reduction Ordinance (TRO) as part of the County's Development Title. The TRO would require major employers in the County, including those within the proposed project, to reduce their peak-hour auto trips through site-specific ridesharing and transit programs and through staggered or flexible work hours programs. The TRO should also set forth specific goals for traffic reduction and require employers to survey their employees each year to monitor the progress of vehicle trip reduction measures.	

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Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.14-1(c) The project sponsor should establish a Transportation Management Organization (TMO) to carry out requirements of the countywide TRO within the project. The TMO should establish and implement a site-specific Travel Demand Management (TDM) plan, including ongoing funding and monitoring and inclusion of TDM elements in lease agreements. The plan should, at a minimum, meet requirements of the County's Congestion Management Plan.</p>	
	<p>4.14-1(d) The project sponsor should provide on-site facilities and amenities to promote and facilitate use of alternatives to the single-occupant vehicle for longer trips to and from the project site. These facilities should include:</p> <ul style="list-style-type: none"> • Provision of numerous park-and-ride lots at appropriate locations within the project (12 sites have been identified by the project sponsor, as shown in Figure 4.14-5). Site design should include bus loading areas and transit rider safety and comfort amenities (e.g., sheltered benches, lighting, bus schedules, transit information numbers, and waste receptacles). • Provision of a bus transit center in the town center area (see Figure 3.7). The transit center should provide comprehensive transit information, including information such as route maps; service frequencies of local transit service over the course of the day; maps, schedules, and phone numbers concerning connections to regional transit providers (e.g., BART, AC Transit, Contra Costa County Transit Agency) and shuttle service to and from employment centers; and information about disabled access provisions on transit lines servicing the center. • Promotion, with State and County assistance, of lanes for priority HOV access to/from the project site (e.g., HOV bypass lane at metered on-ramps to I-580 at Grant Line Road and I-205 at Patterson Pass Road). • Provision of bus pullouts and shelters along potential bus routes within the project site. Bus schedules should be posted at all bus stops. • Provision of bicycle and pedestrian networks to link residential areas with park-and-ride lots and secured bicycle storage should be provided at these locations. 	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.14-1(e) The project sponsor, through the TMO, should ensure an adequate level of external, commute-oriented transit service for the project residents and workers. Transit service (fixed route or dial-a-ride) that provides connections to the nearest urban areas or transit hub should be provided from the outset of housing occupancy, as required by policy of the Draft San Joaquin County Congestion Management Program. Later phases should include commuter express bus service between the project site and major employment sites in San Joaquin County and Alameda County such as Tracy, Manteca, San Ramon, Pleasanton, and Livermore. The TMO should coordinate all transit service for the project with the County to promote development of a coordinated countywide service plan. The TMO should also disseminate information on transit routes and schedules at locations throughout the community. The project sponsor, through the TMO, should provide fair-share funding of these transit services. Fair-share funding would vary depending on the type of service. For example, funding could be split equally between major employers and the project sponsor, who would provide a substantial number of workers for regional employment centers. The sponsor should underwrite the transit operating costs until such time that an agreement is made between a countywide transit agency and the TMO to fund and operate the transit services. The sponsor should be responsible for funding transit connections between future regional transit service endpoints (e.g., BART in Livermore or East Dublin) and the project site where and when warranted by commute demand.</p>	
	<p>4.14-1(f) Local transit service should be provided within the project site with frequent service intervals during peak periods to facilitate non-vehicle travel on internal roads. Stops should provide amenities including covered seating and scheduled stop times and frequency of service over the course of the day.</p>	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.14-1(g) The project sponsor should develop a traffic and land use occupancy monitoring program. The monitoring program would serve as a means of comparing the actual development of the project to the original phasing schedule, and would allow improvements to be tailored to actual project development. Monitoring would also provide the County with a means of assessing the degree to which the sponsor's commitment to ridesharing and transit usage is successful. It is also critical for State highway impact monitoring. Monitoring should be conducted once every year. Land use occupancy information should include specific land use type (e.g. medical office, neighborhood shopping center, low-density apartment); quantity (e.g. number of units, square footage); location; and total number of employees. Traffic monitoring should include a minimum of three weekday 24-hour traffic counts broken into 15-minute increments on all roads connecting the project site to surrounding County roads. The traffic and land use monitoring program should be the responsibility of the on-site TSM coordinator.</p>	
	<p>4.14-1(h) Design guidelines for residential and commercial development within the project should be established to facilitate safe and convenient pedestrian access to transit stops. Transit stops should be located within convenient walking distance (one-quarter mile or less) of employment and commercial areas within the site. Such guidelines should be included as part of the Specific Plan.</p>	
	<p>4.14-1(i) Local-serving commercial uses throughout the project site should be provided to facilitate walk trips for local shopping. Local retail facilities are not sufficiently dispersed throughout the site, as currently proposed, to allow walk access by a majority of residents. By providing a larger number of small local commercial sites, the same total local-serving commercial area could be provided but the accessibility via non-automobile travel could be substantially increased. Additional commercial uses should be identified at the time of the Specific Plan.</p>	
	<p>4.14-1(j) San Joaquin County, with the participation of Alameda County and others, is undertaking the Altamont Pass Rail Corridor Study in early 1992. This study will evaluate feasibility and options for operating commuter rail or other transit service in the corridor between Stockton and the Bay Area. Should passenger rail service on either the UP or SP tracks be determined to be feasible and sufficient patronage be identified to warrant a station near the project site, the project sponsor should contribute a fair share toward a rail station to serve the project and should fund feeder bus service to the station.</p>	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.14-1(k) The overall size of the project could be downscaled to reduce traffic generation of the project and associated adverse impacts on the transportation system. It should be noted, however, that reducing the size of the project would not mitigate all identified adverse impacts of the project since, on many regional facilities, cumulative traffic levels without the project (as indicated for the No Project Scenario) are projected to exceed capacities.	
4.14-2 The project would increase 2010 traffic volumes on study area freeway segments by 3 to 18 percent over cumulative levels projected without the project, resulting in deficient Levels of Service at a number of locations along I-580 and I-205.	4.14-2(a) The project proponent should be required to fund their fair share of the cost of preparing a Project Study Report, according to Caltrans standards, for the I-580 freeway over the Altamont Pass. The project proponent, with the County, should work with Caltrans Districts 4 and 10 and Alameda County to evaluate the potential for implementation of truck climbing lanes on the uphill portions of I-580 over the Altamont Pass.	SU
	4.14-2(b) As part of any Project Study Report(s) required to be prepared by the project proponent to study the most impacted freeway interchanges and identify specific required improvements (see Mitigation Measures in the next section), the developer should also be required to analyze in greater detail the impacts of the project on the mainline freeways affected by the project . The Project Study report(s) should identify the project proponent's fair share contribution to the funding of future freeway lane widenings. The developer should be required to fund the fair share contribution prior to when the impacts are expected to occur.	
	4.14-2(c) The project sponsor, with the County, should be required to coordinate the preparation and adoption of Project Study Report(s) with for any Specific Infrastructure Plans. A comprehensive Infrastructure and Financing Plan that considers all phases of the project should be required to be prepared by the project sponsor and adopted by the County, prior to the approval of any Specific Plans. The Infrastructure and Financing Plan should identify the specific freeway mainline and interchange improvements that would be required to serve each phase of development, and should recommend a schedule for the preparation and adoption of Project Study Reports to implement these improvements. The County should not approve the Specific Plan for the first phase of the project until the required freeway improvements and funding sources for that phase have been identified and the Project Study Report schedule has been approved by Caltrans.	

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Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.14-2(d) A Specific Plan for each phase of the project should be prepared and approved to ensure that industrial and commercial job development does not occur later than as proposed by the project sponsor. A monitoring program should be implemented for each phase prior to approval of the next phase to ensure that the assumptions regarding the amount of internal travel remain valid. Monitoring is also addressed under Mitigation Measure 4.14-1(f).</p>	
<p>4.14-3 The project would increase traffic volumes on adjacent freeway interchanges and require interchange improvements.</p>	<p>4.14-3(a) The project proponent should initiate and fund the preparation of a Project Study Report for the I-205/Patterson Pass Road Interchange prior to the first phase of development to identify the specific improvements that would be required. After improvements are identified, the project proponent should be required to fund the project's fair share of the needed improvements. Additional turn lanes and other ramp interchange improvements should be constructed as necessary based on the phasing plan adopted for the project, including a partial cloverleaf interchange at Patterson Pass/I-205. The Project Study Report prepared for improvements at this interchange should identify specific lane, turn storage, and signalization needs for each development phase.</p>	I
	<p>4.14-3(b) Additional freeway interchanges in the area, such as Grant Line Road/I-580 and 11th Street/I-205, should be studied in more detail when a Specific Plan is prepared for the second phase of the project or earlier. If the Specific Plan indicates the need, the project sponsor may also be required to initiate and prepare a Project Study Report for these two additional interchanges during prior to the second phase of development. The possibility of adding a new interchange at Hansen Road/I-205 may also require study.</p>	
	<p>4.14-3(c) As already noted in Mitigation Measure 4.14-2(c), the project sponsor should be required to coordinate the preparation and adoption of Project Study Reports with any Specific Plans.</p>	
	<p>4.14-3(d) At the time of reconstruction of freeway interchanges, ridesharing and transit usage should be promoted by providing ramp metering and HOV bypass lanes on all reconstructed interchanges.</p>	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.14-3(e) As part of the Project Study Report(s) prepared by the project sponsor for the I-205 and, possibly, I-580 interchanges, additional improvements to the mainline freeway facilities required to mitigate project impacts should be identified. The project sponsor should be required to fund the project's fair share cost of the lane improvements.	
4.14-4 The project would contribute to the need for improvements on Altamont Pass Road, 11th Street, Grant Line Road (between Altamont Pass Road and I-580), and Grant Line Road east of Byron Road.	4.14-4(a) The project sponsor should contribute a proportionate share toward the cost of future improvements on 11th Street, Altamont Pass Road, Grant Line Road between Altamont Pass Road and I-580, and Grant Line Road east of Byron Road (Figure 4.14-10). Proportionate shares toward improvement costs should be based on the proportion of future traffic increases due to the proposed project. Defining the fair share would require coordination between the project sponsor, the City of Tracy, and San Joaquin County at the time of the preparation of the Infrastructure and Financing Plan, accompanied by the first phase Specific Plan. Improvements within Alameda County should be reviewed by and coordinated with Alameda County. San Joaquin County should consider developing a program of traffic impact fees in order to provide cities with funding for improvements to accommodate traffic from new town developments.	I
	4.14-4(b) The project sponsor should contribute a fair share toward extending local transit service from the City of Tracy to the project site to reduce the number of project vehicle trips on 11th Street and Grant Line Road East. Specific arrangements for funding and operating the transit service should be determined by the County, the City of Tracy, and the project sponsor, and should be consistent with countywide transit service arrangements.	
	4.14-4(c) The County should consider realigning Grant Line Road to form a continuous segment where it meets Byron Road. As part of the realignment of Grant Line Road, need for a grade-separated crossing of the existing Southern Pacific railroad tracks should be evaluated.	
	4.14-4(d) The project sponsor should either provide a southbound HOV lane and associated ramp metering improvements along Grant Line Road between the project site and I-580, or should be responsible for providing a fair share of an additional travel lane in each direction on Altamont Pass Road between Grant Line Road and I-580.	

¹ SU: Significant Unavoidable Impact; I: Insignificant.

Note: When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.14-5 The project would significantly increase traffic volumes on County roads in the immediate vicinity of the project site.	4.14-5(a) Roads providing access to the project site should be widened over time as shown in Table 4.14-16 to accommodate project traffic impacts at each phase of development. With the exception of Byron Road, all these roads would require capacity improvements as a direct result of the project. The project would contribute a majority of added traffic to Byron Road between the project site and Grant Line Road west.	
	4.14-5(b) At the Specific Plan stage, the integration of transit facilities and site plans for individual development sites should be detailed further.	
4.14-6 Project-generated trips would result in significant traffic levels on roadways internal to the site, requiring construction of a comprehensive network of adequately sized internal roadways. Internal roadway needs would be slightly greater with the Proposed Project Scenario than with the Market-Constraint Scenario.	4.14-6(a) The internal road adjacent to the Freeway Commercial parcel in the project's southeast corner should be upgraded to major arterial status with six travel lanes by 2010. This road would constitute the primary access to that portion of the project site south of Grant Line Road. Six lanes on this segment would provide sufficient capacity to provide LOS D operation, closely approaching LOS C. This road should either be shifted to the north to allow greater weaving distance on Patterson Pass Road south to I-205, or should be combined with the collector road shown across from existing Von Sosten Road to form a single arterial roadway entrance to the southwest corner of the project.	I
	4.14-6(b) Under the Proposed Project Scenario, the north-south minor arterial proposed for the west side of the project site (Figure 4.14-5) should be upgraded to a six-lane major arterial between the proposed town center and that portion of the site north of Byron Road by 2005.	
	4.14-6(c) Options for direct access between Byron Road and the northern portion of the site should be considered, such as flyover ramps to and from Byron Road or interchanges where Byron Road passes under the proposed major arterial extension of Patterson Pass Road. Any such direct access alternative should include a grade-separated railroad crossing. This mitigation measure would reduce delay for travel between the site and the City of Tracy by providing a less circuitous connection between Byron Road and the portion of the site north of Byron Road.	
	4.14-6(d) The Specific Plan should provide for development of an additional minor arterial in the west-central area of the site that would allow internal arterials in this portion of the site to remain four lanes at buildout or, alternatively, expand the currently proposed minor arterial to six lanes in this segment.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.14-6(e) The collector roadway couplet connection between Patterson Pass Road and the town center should be eliminated.	
4.14-7 The project would generate a significant demand for parking.	4.14-7(a) Further detailed analysis of parking demand, parking supply, and shared parking opportunities should be undertaken during the Specific Plan process when detailed site plans become available. Parking provisions should comply with requirements of the County's prevailing Congestion Management Program.	I
	4.14-7(b) Where feasible, mixed-use districts should be developed to maximize the use of shared parking and reduce the total land area need for parking.	
4.14-8 The project would increase the demand for bicycle travel within the project site as well as between the site and adjacent developed areas.	4.14-8(a) Bicycle use between the project and other nearby developed areas should be encouraged by the provision of Class II bicycle lanes on major arterials and County roads connecting the site to Tracy and Alameda County. The sponsor's proposed bicycle facilities and accommodations should be incorporated into Specific Plan design standards.	I
	4.14-8(b) A continuous Class II bicycle lane should be extended by the project sponsor into the City of Tracy. Grant Line Road should be considered for continuous bicycle lanes between the project site and the City of Tracy.	
	4.14-8(c) The sponsor should provide fair share funding for a continuous bicycle route should be provided by the sponsor along Altamont Pass Road or a comparable route to connect the project site and Alameda County.	
4.14-9 The project would increase the number of vehicles crossing the existing Southern Pacific railroad track that runs through the site.	4.14-9(a) Improvements provided by the project sponsor at the two at-grade crossings within the site on Kelso Road and Henderson Road should include crossing gates, lights, and appropriate signage. Pedestrian access to the railroad right-of-way should be restricted to ensure safe conditions. Pedestrian crossings over the railroad tracks should be considered at the Specific Plan stage.	I
	4.14-9(b) A sound wall along the north side of the Southern Pacific line bisecting the site should be provided to restrict access to the tracks from the adjacent residential areas. The proposed pedestrian/bicycle trail along Mountain House Creek should be grade-separated where it crosses the tracks to ensure pedestrian safety.	

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Note: When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ AIR QUALITY		
4.15-1 The project would increase regional emissions of criteria pollutants through new vehicle travel and area-source emissions associated with residential and industrial uses in excess of threshold levels established by San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). These emissions would add to the regional emission burdens within the San Joaquin Valley air basin and the adjacent San Francisco Bay Area air basin, and delay eventual attainment of air quality standards for ozone and suspended particulate matter (PM-10).	4.15-1(a) At the time of the Specific Plan, land uses and densities should be oriented towards pedestrian/bicycle travel for local trips. The basic strategy should be to place residential uses within one-quarter to one-half mile from commercial uses, schools, and parks.	SU
	4.15-1(b) Park-and-ride and transit amenities should be provided within the project to promote and facilitate use of alternatives to the single occupancy vehicle for trips to and from the project site. This measure is identical to Mitigation Measure 4.14-1(d) in Section 4.14, Transportation.	
	4.15-1(c) A system of pedestrian/bicycle/electric vehicle paths should be established connecting residences to shopping, employment, and recreational uses to encourage non-auto travel for short trips. Such paths should be identified at the time of the Specific Plan.	
	4.15-1(d) The project sponsor should establish a Transportation Management Organization (TMO) to develop and implement trip reduction programs within the project. The TMO should establish and implement a site-specific Travel Demand Management (TDM) plan, including ongoing funding and monitoring and inclusion of TDM elements in lease agreements. A performance standard of 1.5 passengers per vehicle occupancy during peak travel periods shall be the goal of TDM elements. The TMO would be responsible for preparing educational material to be distributed to new homeowners within the project regarding the need to reduce air pollution sources and information on commute and travel alternatives. This measure is similar to Mitigation Measure 4.14- 1(c) in Section 4.14, Transportation.	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.15-1(e) Telecommuting should be encouraged through policies, land use mixes, and zoning ordinances that provide incentives and minimize restrictions for offices in homes and satellite work centers within the project.	
	4.15-1(f) The impact of residential fireplace emissions of PM-10 and carbon monoxide on air quality can be reduced by restricting the number of fireplaces to one per residence, installing natural gas fireplaces , or requiring residential use of EPA-certified wood stoves or fireplace inserts, which reduce PM-10 emissions 70 to 90 percent compared to conventional wood stoves or fireplaces. Low NO_x space and water heaters, in use in several areas of California, should be installed in residences. Electric lawnmowers and blowers should be provided with the sale of residential units, and an electrical outlet and a natural gas line should be provided to the backyard of each residence to provide an alternative to charcoal barbecues.	
	4.15-1(g) The project sponsor, through the TMO, should ensure an adequate level of transit service for the project residents and workers. This mitigation measure is identical to Mitigation Measure 4.14-1(e).	
	4.15-1(h) The mixture of land uses within the project should attempt to locate mutually-supportive land uses in proximity to one another to reduce trip generation or vehicle miles travelled. Locating neighborhood commercial services, day care, schools, and playgrounds within short distances to residential uses would be an example of such mutually-supportive land uses. Providing commercial services such as banking, restaurants, or fitness centers in close proximity to employment-generating uses would be another appropriate land use mix.	
	4.15-1(i) The County should incorporate a requirement for an air quality mitigation fee as part of the Development Title. Such a fee could be imposed when new projects generating more than 200 trips per day are not able to reduce trip generation by at least 25 percent. This fee could be used for air quality improvements such as park and ride facilities, transit, and vehicle inspection.	
	4.15-1(j) Industrial or commercial operations with equipment that causes or has a potential for air pollution or that controls such air pollution may need to apply for an Authority to Construct and Permit to Operate according to regulations of the San Joaquin Valley Unified Air Pollution Control District.	

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Note: When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - *continued*

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
4.15-2 The project would increase the potential for air quality and odor-related land-use conflicts.	4.15-2(a) Prior to adoption of the General Plan amendment, buffer zones between existing agricultural lands and residences should be provided. The size of the buffer zone should be determined by the type of agricultural activities involved, with a larger buffer required where the agricultural activities require frequent tilling, waste burning, or pesticide application. A minimum of 1,000 feet is recommended (see Alternative 5.5). The buffer zone could consist of a mixture of open space, compatible land uses (such as a water treatment plant, some commercial uses, some clean industrial uses), recreational uses, landscaped areas, streets, or other non-intensive uses.	I
	4.15-2(b) Residential uses should be provided with minimum 500-foot buffer zones between industrial uses and the wastewater treatment plant. The buffer zone could consist of a mixture of open space, recreational uses, landscaped areas, streets, or other non-intensive uses. Such buffer zones should be identified prior to the approval of the proposed General Plan amendment.	
4.15-3 Construction activities would generate dust and particulate matter which could exceed the PM-10 threshold of significance by 0.96 ton per day.	4.15-3 The severity of construction impacts can be reduced to a level that is less-than-significant through application of appropriate mitigation measures. To ensure that construction mitigation is implemented, final approval should not be given to any site development until the developer/contractor submits a satisfactory construction mitigation plan. This plan should specify the methods of control that would be used, demonstrate the availability of needed equipment and personnel, and identify a responsible individual who, if needed, could authorize generation and implementation of additional measures.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>The construction dust mitigation plan should, at a minimum, include the following recommendations or equivalent measure for areas of active construction:</p> <ul style="list-style-type: none"> • suspend earthmoving or other dust-producing activities during periods of high winds when dust control measures are ineffective in controlling visible dust plumes; • make available dust control equipment and staff as needed to control excessive amounts of dust from excavated or graded soil surface areas. The dust control measures should be in conformance with Air Pollution Control District regulations and may include, but are not limited to, soil stabilization or soil surface treatment. When water is used to treat the soil surface, an appropriate dust palliative or suppressant should be added to the water before applications; • water or cover stockpiles of debris, soil, sand, or other materials that can be blown by the wind; • sweep construction areas and adjacent streets of all mud and debris, since this material can be pulverized and later resuspended by vehicle traffic; • limit the speed of all construction vehicles to 15 miles per hour on unpaved roads while on site; • cover or wet down all materials transported by truck; • water all inactive portions of the site with an appropriate dust suppressant or cover or seed inactive areas. Completed areas of the site and long-term stockpiles of soil should be seeded within 30 days of completion of activity. 	
■ NOISE		
4.16-1 Residential development, schools, and other noise-sensitive land uses on the project site would be exposed to excessive noise levels, especially in the area between Grant Line Road and I-205.	4.16-1(a) The siting of residential or other noise-sensitive land uses adjacent to Interstate 205 should be avoided. Future residences should be located outside the 65-L _{dn} freeway noise contour.	I

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Note: When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.16-1(b) Locating noise-sensitive land uses as far as possible from major roadways is the preferable solution. When this is not feasible, or desirable, earth berms, or sound walls could be built between the noise source and the noise-impacted area. Typically, an earth berm provides 3 dB of additional noise attenuation over a sound wall of the same height. A sound wall at the top of an earth berm is more aesthetically pleasing than a sound wall of the same total height but, its performance to act as a noise barrier is inferior to an earth berm (Figure 4.16-3). Further noise level reductions to an L_{dn} of 60 dB could be achieved through proper site planning and building orientation, construction of earth berms or sound walls, or a combination of more than one of these methods. Site specific mitigation measures should be determined on a case-by-case basis.</p>	
	<p>4.16-1(c) Schools should not be sited in areas exposed to noise levels above an L_{dn} of 60 dB. The land use plan should be revised to relocate two proposed high schools and three elementary schools.</p>	
	<p>4.16-1(d) At the time of the Specific Plan, acoustical studies should be required for noise-sensitive land uses proposed to be located in areas exposed to noise levels above an L_{dn} of 60 dB. Appropriate mitigation measures should be recommended in these studies and implemented by the appropriate party to ensure that the L_{dn} of 60 dB is not exceeded.</p>	
	<p>4.16-1(e) Noise studies for specific residential projects proposed in noise impacted areas (exposed to an L_{dn} above 60 dB) should address how noise levels in outdoor use areas, such as backyards, patios, decks, etc., could be maintained below an L_{dn} of 60 dB. Other noise-sensitive land uses, such as schools, hospitals, and parks should also require similar studies.</p>	
	<p>4.16-1(f) Interior noise levels for housing proposed to be located in areas exposed to an L_{dn} above 60 dB should be maintained below an L_{dn} of 45 dB. Compliance with this recommended mitigation measure should be verified at the time of the Specific Plan.</p>	

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	<p>4.16-1(g) Because of the potential for aircraft overflights, the results of a noise study should be included in the Specific Plan to determine whether changes in the land use plan and/or treatments to the noise sensitive structures would be required to minimize or eliminate noise impacts to project site occupants. Also, the County should consider requiring that potential new residents be notified of the presence of the airport and of the potential for aircraft overflights.</p>	
<p>4.16-2 Existing residences located adjacent to existing roads in and around the proposed Mountain House New Town would be significantly impacted by project-generated traffic.</p>	<p>4.16-2 Outdoor use areas of existing residences that would be impacted (i.e., would experience an increase of 5 dB in the L_{dn}) by project-generated traffic noise should be protected from excessive noise. At the Specific Plan stage, the County should refine the traffic study and revise the acoustical analysis to identify potentially impacted residences (minimum noise level increases of 5 dB), and if feasible, offer mitigation measures to minimize the impacts.</p> <p>Mitigating impacts at individual residences could take the form of constructing sound walls along the roadways, soundproofing homes, or building barriers/fences around specific portions of yards to provide shielded outdoor spaces. Because of the nature of the development in the area, solutions would have to be tailored to each specific situation.</p>	I
<p>4.16-3 Proposed noise-sensitive land uses adjacent to agricultural lands, could be significantly impacted by agricultural machinery and equipment noise.</p>	<p>4.16-3 Earth berms, sound walls, or other mitigation identified at the Specific Plan stage should be constructed where noise-sensitive land uses would abut agricultural fields. Alternatively, a buffer zone between proposed noise-sensitive land uses and agricultural lands could be provided prior to adoption of the General Plan Amendment. A 1,000-foot wide on-site buffer zone would reduce noise levels generated by agricultural machinery by approximately 20 dB.</p>	I
<p>4.16-4 Construction noise during the 17-year development period would be a significant noise impact.</p>	<p>4.16-4(a) Noise-generating construction equipment, including truck traffic coming to and from the site for any purpose, should be limited to weekdays, between the hours of 8:00 AM and 5:00 PM if construction activity is within 500 feet of any existing residential development. Noise impacts during construction can be mitigated by controlling the hours of construction. This may be appropriate in some situations and should be considered on a case-by-case basis as construction proceeds in the new community.</p>	I

¹ SU: Significant Unavoidable Impact; I: Insignificant.

Note: When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
	4.16-4(b) All construction equipment powered by internal combustion engines should be properly muffled and maintained. The prudent selection of equipment, along with the use of proper mufflers, should limit construction-related noise generated by a particular piece of equipment to 85 dBA when measured at a distance of 50 feet from the piece of equipment operating at its noisiest mode.	
	4.16-4(c) All stationary noise-generating construction equipment, such as air compressors, should be located as far as possible from existing residences. Such equipment should be acoustically shielded where possible.	
	4.16-4(d) Quiet construction equipment, particularly air compressors, should be selected whenever possible.	
■ GROWTH-INDUCING IMPACTS		
The project could result in unavoidable growth-inducing impacts due to the large number of surrounding agricultural parcels.	Buffer zones should be provided on the east and west sides of the project that have deed restrictions to prevent development. I-205 and Old River would minimize growth-inducing impacts for land to the north and south of the project site. The on-site water and wastewater plants should be sized to serve no more than the proposed project and could be more centrally-located to minimize growth inducement.	SU

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
■ CUMULATIVE IMPACT MITIGATION MEASURES³		
Land Use and Agricultural Issues	San Joaquin County should consider imposing impact fees which can be used to purchase development rights or supports land trusts. Policies and regulations regarding such fees should be incorporated into the Revised Draft General Plan 2010. Counties within the Central Valley should expand areas zoned for agricultural use. The State Department of Conservation should include, with their Prime Farmlands Map, recommendations for preserving prime agricultural land. A regional task force should be formed to establish incentive mechanisms to retain agricultural land in the Central Valley.	SU
Public Services/Parks and Recreation	A regional recreational task force should be formed to develop funding mechanisms to expand and maintain regional recreational facilities. San Joaquin County, in conjunction with the cities in San Joaquin County, should develop a fee structure to finance regional parks. Current policies regarding regional parks should be reviewed and possibly revised.	I
Public Services/Schools	School district officials should review development plans to ensure adequate school facilities are available when needed. Development plans calling for new school sites should be reviewed by school district officials to confirm size of facility, acreage for individuals school sites, and verification that the correct student generation rate was used to calculate the size and extent of new facilities.	I
Public Services/Fire Protection Service	The County's Draft Development Title proposes development impact fees to be charged for new developments to finance construction of fire protection facilities. Community Service Districts and Community Facilities Districts should be established for new communities to fund added fire protection service.	I
Public Services/Police Protection Service	A Community Services District (CSD) should be formed to offset the financial burden of increased costs. In establishing a CSD, residents can choose the level of law enforcement based on assessment costs. Fees collected from the CSD should also be used to increase marine patrol services in the Delta during the summer months. Development fees similar to those assessed for fire protection service should be implemented for police protection service.	I

¹ GPA: General Plan amendment stage; SP: Specific Plan Stage; PC: Pre-Construction stage (i.e., Tentative or Final Maps); C: Construction stage; O: Operation stage

² SU: Significant Unavoidable Impact; I: Insignificant.

³ Refer to Section 6.1 regarding cumulative impacts.

Note: When mitigation measures are to occur prior to the Specific Plan but after the General Plan amendment, the initials "SP" occur with text to clarify timing.
When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
Public Services/Libraries	Development fees for new residential development should be assessed to help offset the costs of providing additional library facilities. Such fees should be included in the County's Development Title, expected to be adopted in 1992.	I
Public Utilities/Water Demand	In the San Joaquin County General Plan Update process, the policy implications of changing irrigation districts, which have historically served only agricultural water users, into multi-purpose water supply agencies should be addressed particularly for new town development in unincorporated areas. Analysis of the fiscal impact should be undertaken, especially regarding the potential pressure to equalize water rates which could affect preservation of farmland in San Joaquin County. Plumbing and building codes should be amended for Alameda, San Joaquin, and Contra Costa counties to require Best Management Practices for water conservation and wastewater reclamation. County policies for all three counties should be adopted to encourage maximum water conservation and reclamation. During the General Plan Update process, San Joaquin County should consider water supply on a regional, multi-county basis.	I
Public Utilities/Wastewater Flows	When updating the San Joaquin County General Plan, San Joaquin County should support the Central Valley Regional Water Quality Control Board by adopting policies to minimize, to the extent feasible, land use changes that would generate significant increases in wastewater discharges into Old River and other surface waters that drain into the Sacramento-San Joaquin Delta. The proposed new communities in the County should identify adequate acreage for sludge treatment and/or disposal.	I
Public Utilities/Potential To Create a Public Health Hazard	San Joaquin County should cooperate with the California Department of Toxic Substance Control (DTSC) and Central Valley RWQCB in implementing reclamation projects, including agricultural and landscape irrigation, and groundwater recharge with reclaimed water, so that the public health of San Joaquin County residents is protected.	I
Public Utilities/Storm Drainage	New developments should be designed to minimize and control the discharge of pollutants associated with residential areas, with new construction, with industrial areas, and with transportation. Potential future regulatory requirements on stormwater discharges for small communities should be considered in the planning stages. Stormwater discharges from construction and industrial sites should be permitted in accordance with State and Federal regulations.	I

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
Public Utilities/Gas and Electricity	Energy conservation and alternative energy use measures recommended in the DEIR on the San Joaquin County Draft General Plan (San Joaquin County, 1991d) should be implemented in conjunction with those measures recommended for the proposed project.	I
Public Utilities/Telephone	None necessary.	--
Cultural Resources	Test excavation, monitoring (such as recommended for the project), and/or ethnographic or historical studies would be appropriate to mitigate cumulative impacts to cultural resources.	I
Geology, Soils, and Seismicity	Mitigation measures recommended for the proposed project in Section 4.6, should be implemented for similar impacts associated with cumulative development.	I
Hydrology and Water Quality	Levee stability impacts could be mitigated by appropriate design and maintenance of the south Delta levees as recommended by the DWR's Delta Flood Hazard Mitigation Plan. County policies and regulations, including Section 9-1135 of the County Development Title, which require appropriate control of storm drainage in new developments should be applied to all future projects. The potential impact of increased boating could be mitigated to an insignificant level by establishing and enforcing appropriate boat speed limits, which reduce wake production.	I
Visual Quality	Mitigation measures to reduce the associated visual impacts of growth along I-580 and I-205 would be similar to those recommended for the proposed project which include: extensive setbacks of development from the freeway; landscaping with evergreen trees to screen development from view; and, continuation of agricultural operations adjacent to the freeway to maintain the existing rural ambience. Permanently-protected open space at the edges of new development would also mitigate potential visual quality impacts.	I
Fiscal Impacts	The County should ensure that, as a condition of receipt of development entitlement, all unincorporated new communities have the monitoring mechanisms and special districts in place that would prevent each new town from incurring a net General Fund deficit. These monitoring mechanisms and special districts should be identified and approved by the County at the Specific Plan stage of the development approval process.	I

¹ GPA: General Plan amendment stage; SP: Specific Plan Stage; PC: Pre-Construction stage (i.e., Tentative or Final Maps); C: Construction stage; O: Operation stage

² SU: Significant Unavoidable Impact; I: Insignificant.

³ Refer to Section 6.1 regarding cumulative impacts.

Note: When mitigation measures are to occur prior to the Specific Plan but after the General Plan amendment, the initials "SP" occur with text to clarify timing.
When more than one mitigation measure is identified, the combination of measures would be required to result in insignificant impacts.

Table 2.1 - continued

Impact	Mitigation Measure	Level of Significance After Mitigation ¹
Financial Impacts	Significance of impacts undetermined.	--
Population, Housing, and Employment	For cumulative growth, especially for the proposed new communities in unincorporated areas, each phase of development should be approved after verification that a ratio of 1.0 employed residents per job can be achieved. Projects should only be approved at specific phases.	I
Public Health and Safety	San Joaquin County should develop regulations requiring that preliminary environmental assessments should be performed at all sites for proposed development. If the preliminary assessment identifies past or present sources of contamination, remediation of the site should be required as a condition for development. The California Environmental Protection Agency should develop, in conjunction with other Federal, State, and local agencies, a program to evaluate the potential impacts of residual agricultural chemicals on people living in areas converted from agricultural to residential land uses. The San Joaquin County Public Health Department (SJCPHD) should establish a program for private well water quality testing. The residents of properties adjacent to wells identified as contaminated should be notified by the SJCPHD.	I
Biological Resources	The County should develop Countywide Habitat Conservation Plans for Swainson's hawk and the kit fox. Stringent zoning controls should be imposed in areas of biological significance.	I
Transportation	Mitigation measures identified for the proposed project in Section 4.14 also address cumulative traffic increases.	SU
Air Quality	Similar mitigation measures prepared for the project (i.e., land use mixes to promote non-vehicular travel) should be implemented for all cumulative growth. The County should adhere to the mitigation measures identified in the recently Adopted Air Quality Attainment Plan.	SU
Noise	The County should use noise policies contained in the Noise Element of the General Plan to evaluate potential noise impacts associated with proposed projects. Projects to be located in areas showing large noise increases (Figure 6.2) should require noise studies to quantify the project contribution to the future noise environment. If the noise impacts associated with a specific project are found to be significant, mitigation measures should be proposed to reduce the impact.	I

3.0 PROJECT DESCRIPTION

3.0 PROJECT DESCRIPTION

3.1 PROJECT LOCATION

The proposed Mountain House New Town project site is located at the western edge of San Joaquin County, northwest of the City of Tracy (Figure 3.1). The Alameda County line forms the western boundary of the project site (Figure 3.2).

Major highway access to the project site is available from Interstate-580 (I-580) and Interstate-205 (I-205), (Figure 3.2). Immediately southwest of the site, I-580 splits from I-205 to join Interstate-5 (I-5) to the south. The Altamont Pass is located west of the project site (Figure 3.2).

Local road access is available via Grant Line Road, Patterson Pass Road, and Byron Road (Figure 3.2). All of these roads are accessible from I-205. Byron Road connects the City of Tracy with Brentwood located in eastern Contra Costa County (Figure 3.2).

Southern Pacific (SP) railroad lines traverse the northern portion of the project site, adjacent to Byron Road. Old River, which forms the northern project boundary, merges with the Delta-Mendota Canal at the site's northwestern corner. In this same location, the three counties of San Joaquin, Alameda, and Contra Costa converge. Clifton Court Forebay, which is used for storage of water prior to release into the Delta-Mendota Canal or the California Aqueduct, is located immediately north of the site (Figure 3.2).

3.2 EXISTING SITE

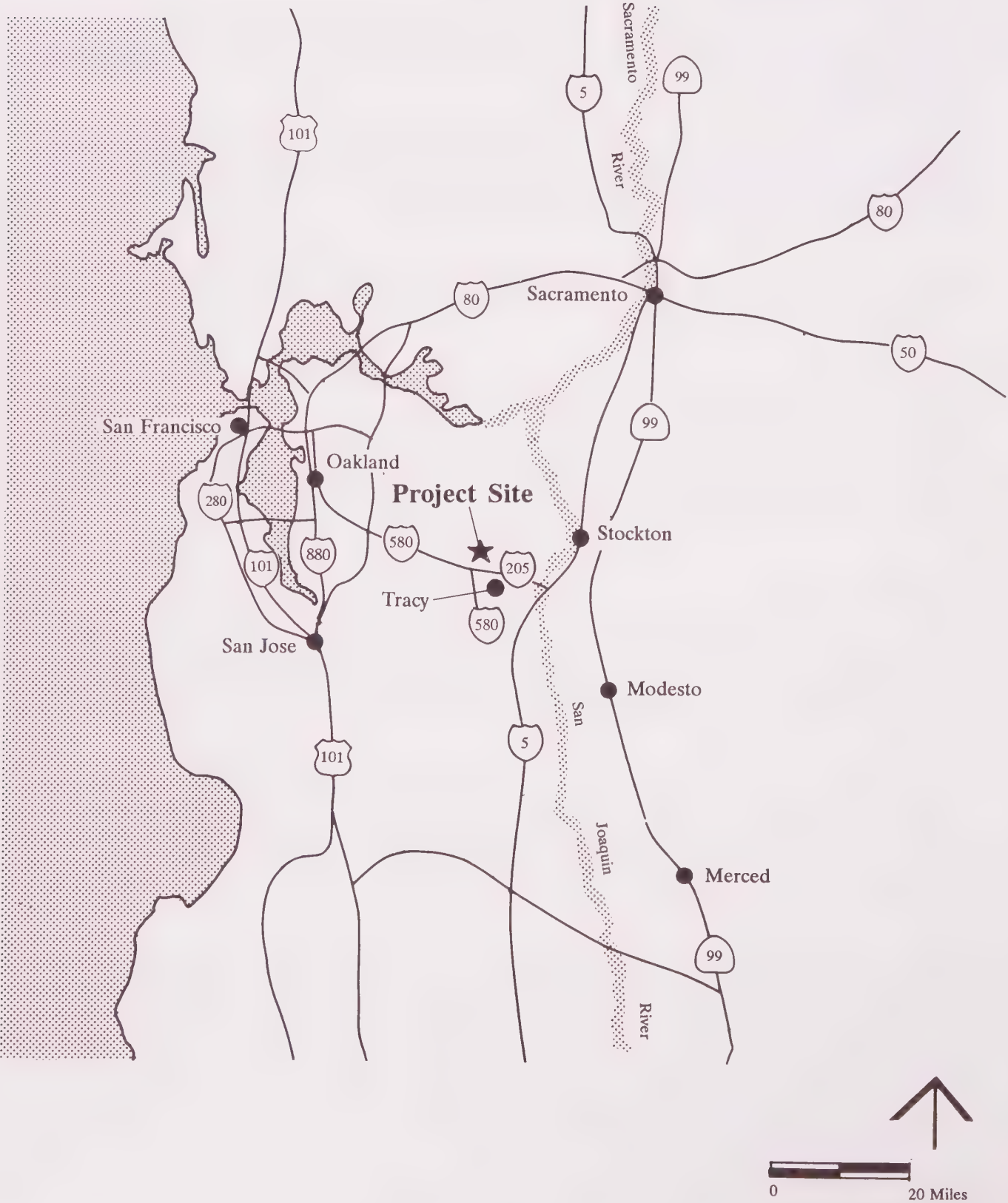
The project site is primarily in agricultural use at the present time (Figures 3.3 and 3.4). The site consists of 4,667 acres, of which 4,404 acres are used for field and row crop agriculture, and the remaining acreage is used for scattered residences, streets, wetlands, and a railroad right-of-way. About 30 residences and two large dairies are located within the project boundaries.

Two creeks traverse the site, flowing from the southwest to the northeast towards Old River, which forms the northern boundary of the site (Figure 3.5). The major portions of the creeks have been reconstructed into farm ditch drainage. Nonagricultural vegetation is limited primarily to the on-site drainageways, near existing residences, and along Old River. The site slopes at about one percent to the northeast from an elevation of 165 feet at I-205 to near sea level at Old River (Figure 3.5).

The project site consists of 92 assessor parcels (Table 3.1); 24 parcels (approximately 3,308 acres) are within the applicant's control, either by direct ownership or in the form of options on the properties (Figure 3.6). The remaining parcels (approximately 1,357 acres) are not under the applicant's ownership or control. The parcels not under the applicant's control are either smaller properties under negotiation with the applicant or are included in the project because of recommendations by the San Joaquin County Community Development Department to address an expanded study area. The expanded boundary forms a logical planning unit for analysis in this DEIR.

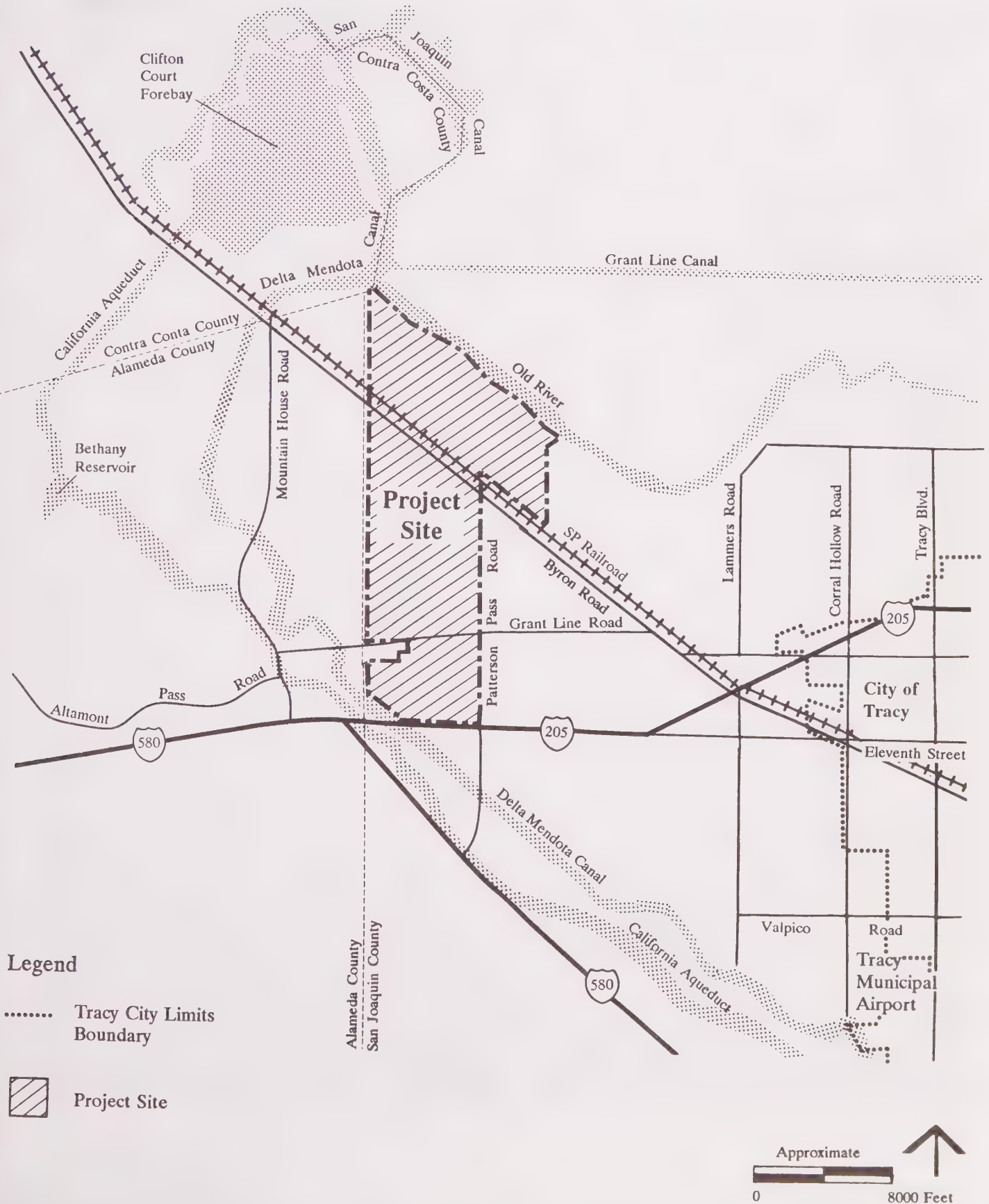
REGIONAL LOCATION

Figure 3.1

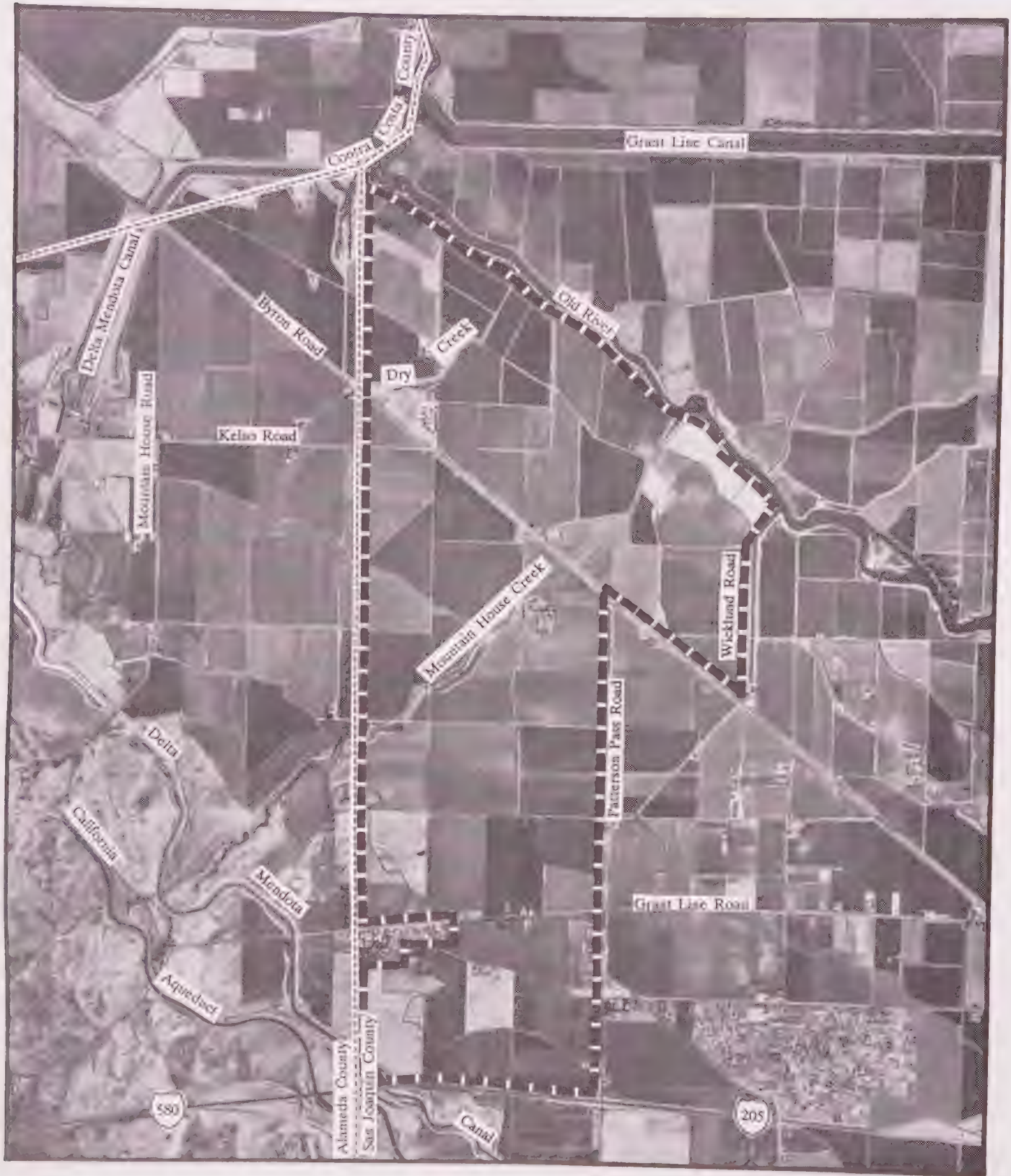


PROJECT LOCATION

Figure 3.2



BASELINE

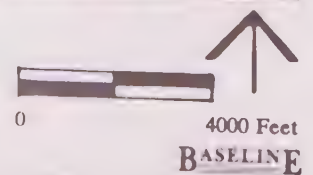


Legend

— — — Project Site Boundary

Source: Pacific Aerial Surveys, 1989

R10114 10/23/91





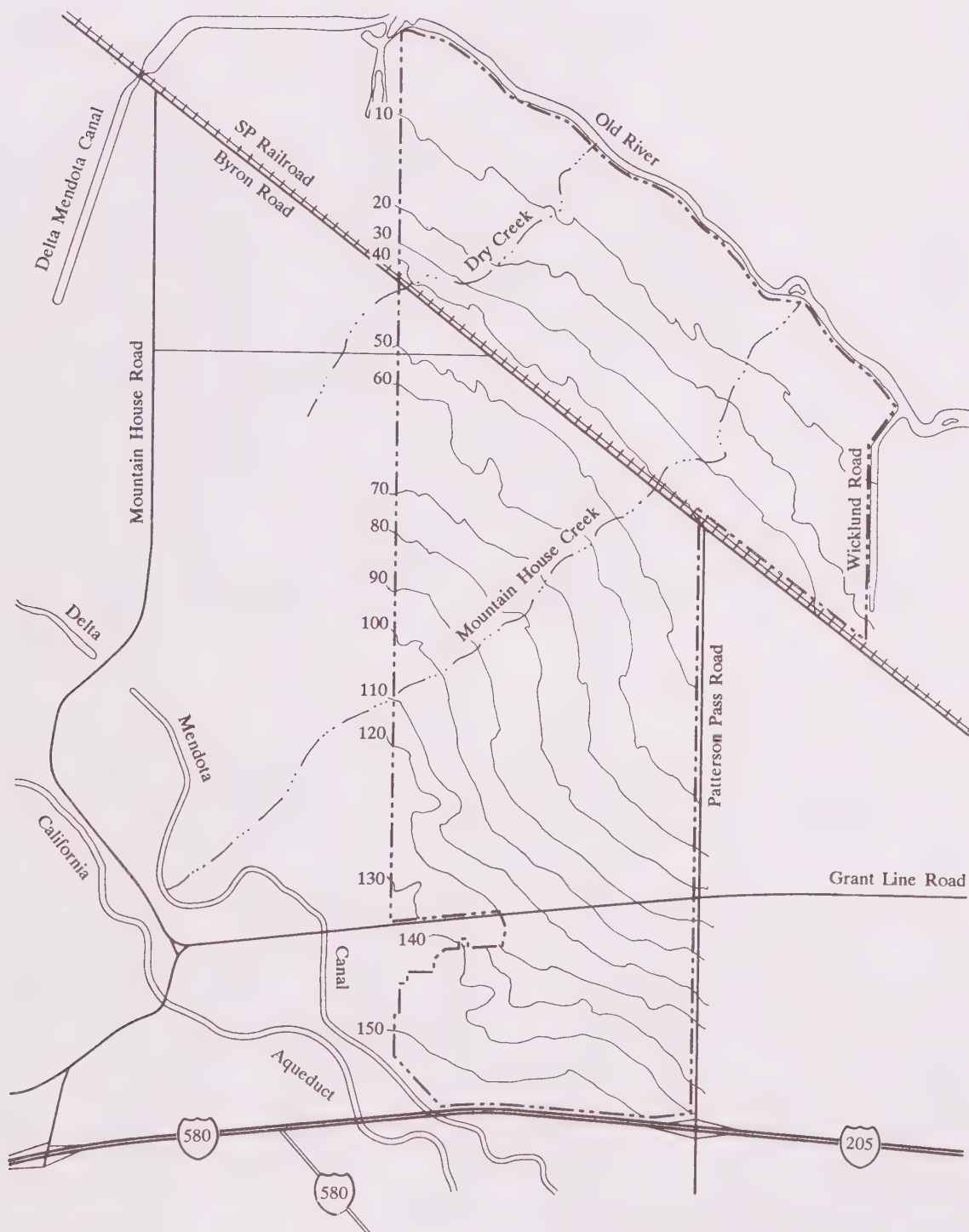
A. Aerial view of site looking north from the Patterson Pass Road and I-205 interchange.



B. Aerial view of northern portion of site, looking southwest across Old River in the foreground.

EXISTING SITE TOPOGRAPHY

Figure 3.5



Legend

- ~ 50 ~ Contour Line
(feet above MSL)
- - - Project Site Boundary



Source: R.W. Siegfried and Associates

R10114 10/23/91

TABLE 3.1

ASSESSOR PARCEL NUMBERS

Assessor Parcel No.	Acreage ¹	Assessor Parcel No.	Acreage	Assessor Parcel No.	Acreage
209-020-05	0.2	209-040-02	60.0 ²	209-060-32	19.4
209-020-06	0.1	209-040-03	84.6 ²	209-060-33	20.01
209-020-07	0.1	209-040-04	3.8	209-020-34	8.0
209-020-08	0.4	209-040-06	253.2 ²	209-020-35	1.9
209-020-09	0.3	209-040-07 and		209-020-36	1.8
209-020-10	0.3	209-040-08	15.4	209-020-38 and	
209-020-11	0.3	209-040-09	30.0 ²	209-060-39	21.1
209-020-13	0.4	209-040-10	282.6 ²		
209-020-14	0.6			209-070-23	3.0
209-020-15	0.3	209-050-02	318.0 ²	209-070-24	31.7
209-020-16	0.1	209-050-03	159.2 ³	209-070-26	12.7
209-020-17	0.4	209-050-04	159.2 ³		
209-020-18	0.2	209-050-06	128.6 ²	209-080-02	135.7
209-020-19	0.3	209-050-07	130.0 ²	209-080-03	33.1
209-020-20	0.4			209-080-15	1.5
209-020-21	1.8	209-060-03	57.1 ²	209-080-16	5.5
209-020-22	0.1	209-060-04	61.7 ²	209-080-17	114.2
209-020-23	1.4 ²	209-060-05	97.0	209-080-21	169.1
209-020-24	0.6 ²	209-060-08	148.0		
209-020-25	0.8	209-060-11	36.8	209-150-15	9.3
		209-060-18	0.7	209-150-27	33.3
209-030-02	0.8	209-060-19	0.5	209-150-28	10.5
209-030-03	344.3 ²	209-060-20	0.5		
209-030-04	445.2 ³	209-060-21	0.4	209-160-01	55.7
209-030-05	78.0 ²	209-060-22	0.5	209-160-02	152.5 ²
209-030-06	25.0 ²	209-060-23	2.1	209-160-03	0.5
209-030-11	60.3 ²	209-060-25	21.0	209-160-04	1.3
209-030-12	29.3	209-060-26	0.0	209-160-05	0.5
209-030-15	29.8	209-060-27	106.1 ²	209-160-06	5.2
209-030-16 and		209-060-28	61.8	209-160-08	4.3
209-030-17	0.3	209-060-29	12.2 ³	209-160-10	2.6
209-030-18	182.3	209-060-30	106.9 ³	209-160-11	1.1
209-030-19	1.8	209-060-31	19.4		
				209-170-02	251.2 ³
Total					4,666.9

¹ Acreage is based on estimates from Assessor Map information and is not exact.

² Under applicant's control by options on property.

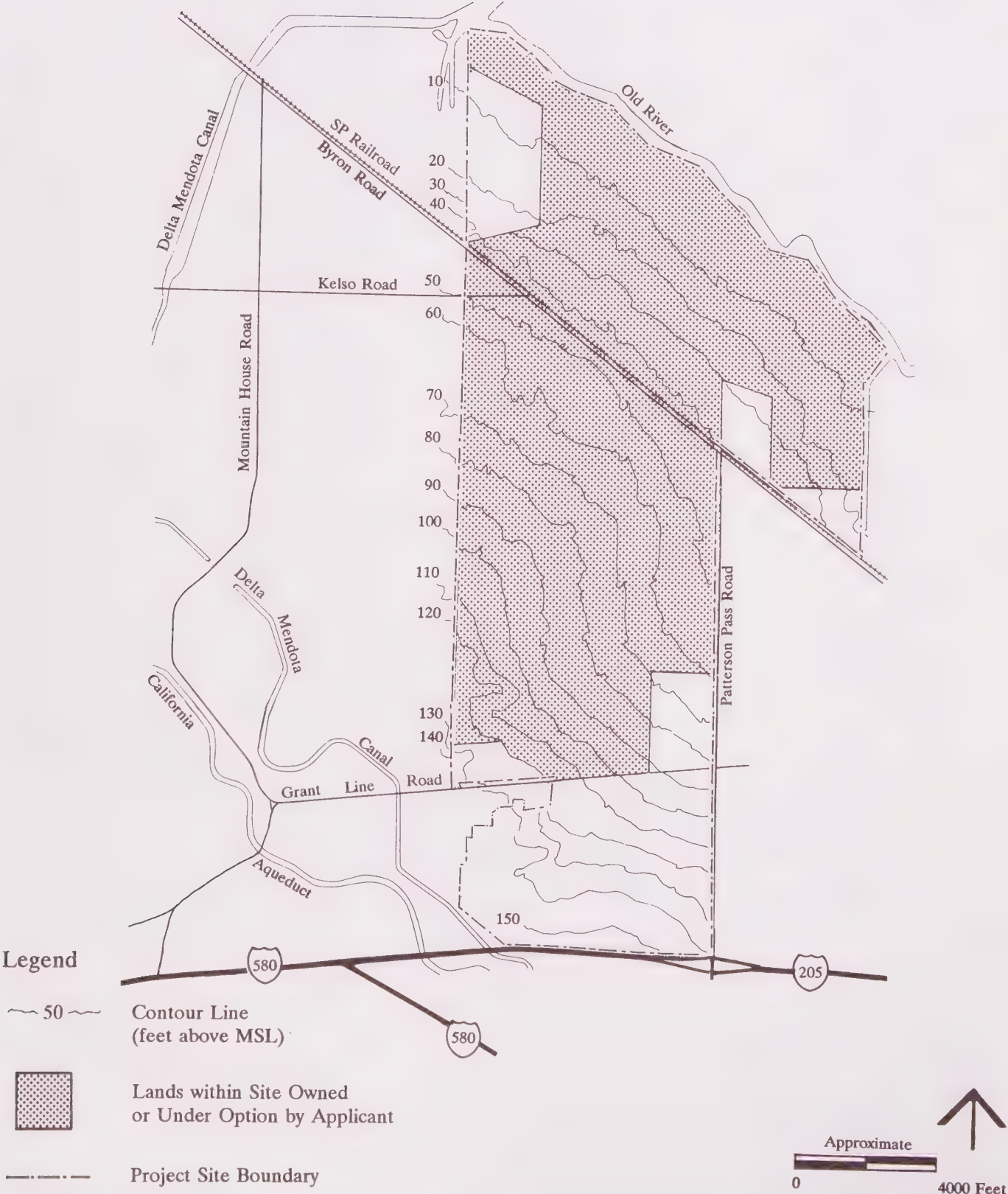
³ Owned by applicant.

⁴ The subtotal refers to acreage owned by or under the control of applicant.

Source: The SWA Group.

ACREAGE UNDER CONTROL OF APPLICANT

Figure 3.6



Source: Trimark Communities

3.3 PROJECT LAND USES

The proposed project would include a mix of residential, commercial, industrial, institutional, open space, and recreational land uses within the 4,667-acre project site (Figure 3.7 and Table 3.2). The proposed General Plan Amendment would amend the current General Plan designation, which is Agriculture, to a variety of land use designations.

TABLE 3.2
PROPOSED LAND USES

Land Use	Acres	Land Use	Acres
<u>Residential:</u>		<u>Institutional:</u>	
Low density (4.5 du/ac ¹)	1,202	Elementary and middle schools	180
Medium density 9 (8 du/ac ¹)	995	High schools	80
Medium-high density (12 du/ac ¹)	164	Sewer and waste utility area ³	50
High density (18 du/ac ¹)	<u>37</u>	Water treatment plant ³	<u>23</u>
Total	2,398	Total	333
<u>Commercial:</u>		<u>Open Space and Recreation:</u>	
Community commercial	62	Neighborhood parks	62
Mixed-use commercial	43 ²	Community parks	129
Neighborhood commercial	47	Regional parks	70
General commercial	36	Resource conservation	40
Freeway service commercial	27	Other open space (golf course, marina, landscape easement)	<u>449</u>
Office commercial	<u>60</u>	Total	750
Total	275		
<u>Industrial:</u>		<u>Infrastructure (Roads and Railroads):</u>	
Limited industrial	317	Existing streets	40
General industrial	<u>110</u>	Proposed major roads and overpasses	427
		Existing railroad	<u>17</u>
Total	427	Total	484
Total Acres		4,667	

¹ du/ac: **average** dwelling units per acre.

² Eight of these 43 acres would be used for a hotel. These 43 acres would be the Town Center for the proposed project.

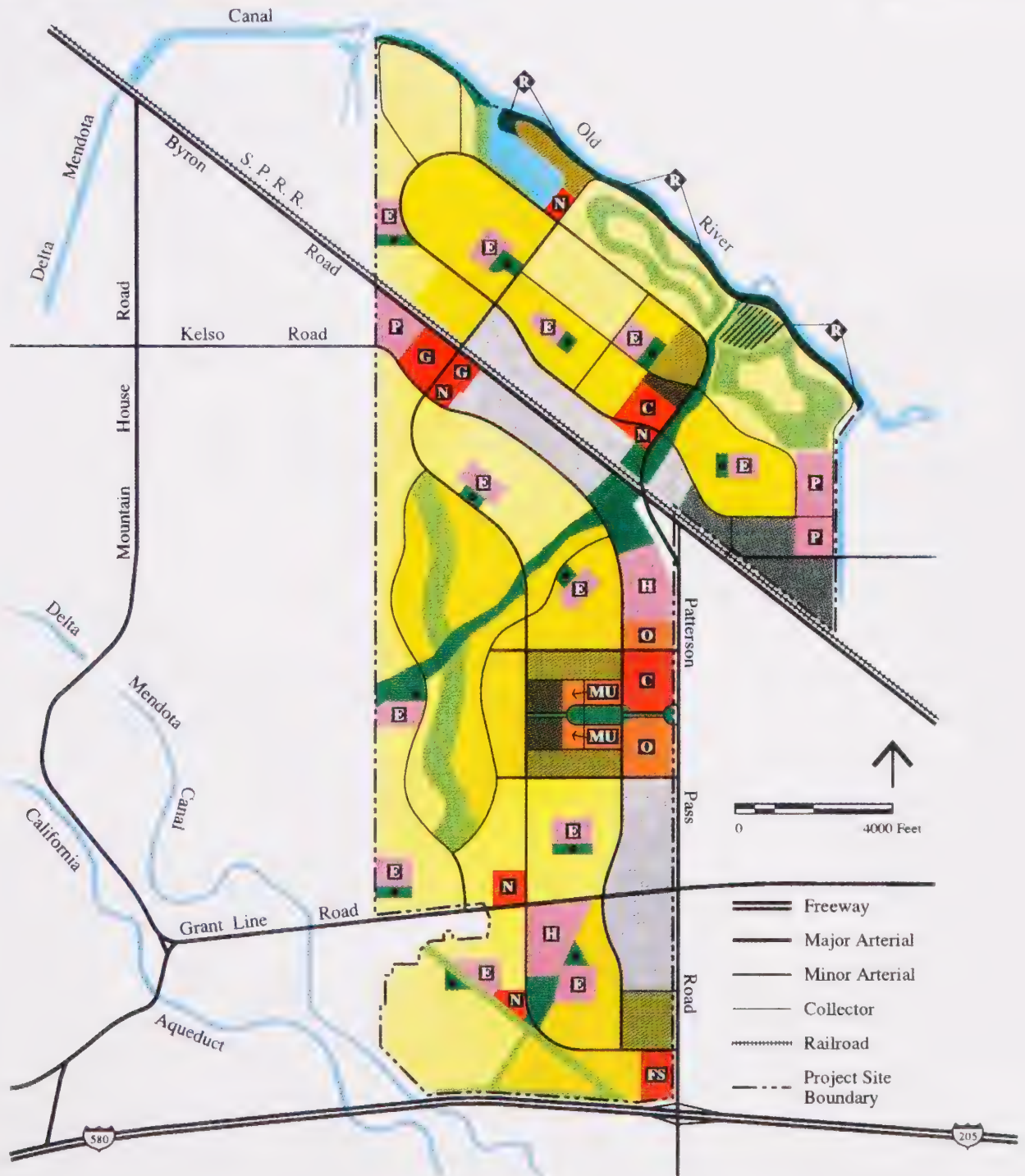
³ The water and wastewater treatment plants and waste utility area are proposed for the acreage designated for Public or Institutional use (Figure 3.7).

Note: See Figure 3.7 for location of land use designations.

Source: The SWA Group.

PROPOSED LAND USE PLAN¹

Figure 3.7



RESIDENTIAL

- Low Density
- Medium Density
- Medium High Density
- High Density

COMMERCIAL

- N** Neighborhood
- C** Community
- FS** Freeway Service
- G** General
- O** Office
- MU** Mixed Use

PUBLIC

- Public or Institutional
- Elementary School
- High School

INDUSTRIAL

- Limited
- General

OPEN SPACE

- Resource Conservation
- Other Open Space

PARKS

- Neighborhood
- Community
- Regional

¹ These land use designations may need to be revised if the project is acted upon prior to the adoption of the Revised Draft General Plan 2010.

The largest (51.4 percent) acreage is proposed for residential uses (Table 3.2). A total of 16,003 residential units would be developed on 2,398 acres of the site at various densities (Table 3.3). Of the 16,003 dwelling units, 33.8 percent would be developed within areas designated for low-density development, 49.7 percent would be developed within areas designated for medium-density development, and 16.5 percent would be developed within areas designated for medium-high and high-density development (Table 3.3).

A total of 275 acres are proposed for commercial uses, including: a town center for retail, office, civic, and hotel uses (43 acres); three areas for community and general commercial, civic, and office uses (98 acres); two areas for office uses (60 acres); five neighborhood commercial areas (47 acres) throughout the site; and one freeway service commercial area (27 acres) near I-205 (Figure 3.7).

A total of 427 acres are proposed for limited industrial and general industrial development. These acres are generally proposed in the vicinity of the Southern Pacific railroad lines and along the western edge of Patterson Road (Figure 3.7).

A total of 333 acres are proposed used for institutional land uses. Institutional uses proposed for the project include 12 elementary/middle schools (180 acres), two high schools (80 acres), a sewer and waste utility area (50 acres), and a water treatment plant (23 acres) (Figure 3.7).

Open space and recreational land uses are proposed on 750 acres, of which 191 acres would be devoted to neighborhood and community parks. An additional 70 acres would be used for regional park lands in the northern portion of the site adjacent to Old River. A separate 40-acre area would be designated for open space and resource conservation purposes, which would primarily be for a wetlands restoration area adjacent to Old River. The largest portion of the proposed open space (449 acres) would be used for golf courses, a marina, and landscape easements.

Existing and proposed infrastructure (i.e., roads and railroad lines) would cover 484 acres of the project site. Of these 484 acres, proposed major roads and overpasses would constitute 427 acres; the remaining acreage consists of existing facilities.

TABLE 3.3

RESIDENTIAL DENSITIES AND ACREAGES

Residential Category	Acres	Average Units/Acre	Number of Units
Low density	1,202	4.5	5,409 ¹
Medium density	995	8	7,960 ¹
Medium-high density	164	12	1,968 ²
High density	37	18	666 ²
Total	2,398		16,003

¹ These units would be single-family units. Thus, there would be a total of 13,369 single-family units on 2,197 acres.

² These units would be multi-family units. Thus, there would be a total of 2,634 multi-family units on 201 acres.

Note: See Figure 3.7 for location of residential land use categories.

Source: The SWA Group.

TABLE 3.4

LAND USES FOR TENTATIVE DEVELOPMENT PHASES I THROUGH IV
(acres)

Land Use	Phase I (1993- 1995)	Phase II (1996- 2000)	Phase III (2001- 2005)	Phase IV (2006-2010)	Total
<u>Residential:</u>					
Low density ¹	210	287	336	369	1,202
(dwelling units)	(945)	(1,292)	(1,512)	(1,660)	(5,409)
Medium density ²	228	276	279	212	995
(dwelling units)	(1,824)	(2,208)	(2,232)	(1,696)	(7,960)
Medium-high density ³	13	77	35	39	164
(dwelling units)	(156)	(924)	(420)	(468)	(1,968)
High density ⁴	--	14	23	--	37
(dwelling units)	--	(252)	(414)	--	(666)
Total dwelling units	(2,925)	(4,676)	(4,578)	(3,824)	(16,003)
Total Residential	451	654	673	620	2,398
<u>Commercial:</u>					
Community commercial	15	32	15	--	62
Town center	15	7	21	--	43
Neighborhood commercial	10	7	20	10	47
General commercial	12	24	--	--	36
Freeway service	--	--	--	27	27
Office commercial	19	22	19	--	60
Total Commercial	71	92	75	37	275
<u>Industrial:</u>					
Limited industrial	48	93	100	76	317
General industrial	40	23	27	20	110
Total Industrial	88	116	127	96	427
<u>Schools:</u>					
Elementary, middle	30	60	45	45	180
12 schools @ 15 acres each (# of schools)	(2)	(4)	(3)	(3)	(12)
High school	--	40	40	--	80
2 schools @ 40 acres each (# of schools)	--	(1)	(1)	--	(2)
Total Schools	30	100	85	45	260
<u>Open Space and Recreation:</u>					
Neighborhood parks	10	22	15	15	62
Community parks	47	24	40	18	129
Regional parks	--	70	--	--	70
Resource conservation	40	--	--	--	40
Other open space					
• Golf courses	102	175	75	--	352
• Marina	--	53	7	--	60
• Landscape easements	--	--	--	37	37
Total Open Space and Recreation	199	344	137	70	750

Land Use	Phase I (1993- 1995)	Phase II (1996- 2000)	Phase III (2001- 2005)	Phase IV (2006-2010)	Total
Public Utilities and Roads:					
Sewer and waste utility area	25	--	25	--	50
Water treatment plant	13	--	10	--	23
Existing streets	22	6	12	--	40
Major roads and overpasses	85	128	112	102	427
Existing railroad	1	16	--	--	17
Total Utilities and Roads	146	150	159	102	557
Total Acres	985	1,456	1,256	970	4,667

¹ Low density residential development assumes 4.5 dwelling units per acre.

² Medium density residential development assumes 8 dwelling units per acre.

³ Medium-high density residential development assumes 12 dwelling units per acre.

⁴ High density residential development assumes 18 dwelling units per acre.

Note: See Figure 3.8 for phasing construction.

Source: The SWA Group.

A total of 1,456 acres are proposed to be a part of Phase II. Almost one-fourth of the Phase II acreage would be set aside for recreational and open space uses. The first of two high schools, located adjacent to Patterson Pass Road, would be constructed in Phase II. The 70 acres of regional park land proposed for the project would also be constructed in Phase II.

PHASE III

Phase III would include 1,256 acres of development and would take place between 2001 and 2005. Phase III development would occur primarily in the center of the site just north of Grant Line Road (Figure 3.8); this area is proposed for a mix of residential, commercial, industrial, and open space purposes. Phase III would also include development to the north of the SP railroad tracks, which would include medium-density and high-density residential, limited and general industrial, community and neighborhood commercial, and public uses. The high school proposed just south of Grant Line Road would be constructed in Phase III.

PHASE IV

The last construction phase, Phase IV, would cover 970 acres in the southern and northwestern portions of the site (Figure 3.8). A small area (20 acres) of general industrial development at the site's eastern edge would also be constructed in Phase IV. Almost the entire area between I-205 and Grant Line Road would be developed in Phase IV, including two elementary schools, a neighborhood commercial center, and a community park surrounded by residential development. No high-density residential development would occur in this last phase.

3.5 PROJECT POPULATION AND EMPLOYMENT

At full buildout, the project would have a resident population of 43,636 persons. The projected population assumes an average of 3.12 persons per household for low-density residential areas, 2.7 persons per household for medium-density residential areas, and 2.0 persons per household for medium-high density and high-density residential areas (Table 3.5).

Phase I is expected to result in a resident population of 8,185 persons, or 19 percent of the buildout population. Phases II and III would each include approximately 28 percent of the projected buildout population, or 12,345 and 12,411 residents, respectively. Phase IV would add 10,695 residents, the final 25 percent of the projected total population (Table 3.5).

At full buildout, the project applicant projects that approximately 19,880 jobs (Table 3.6) would be created. Phase I would result in sufficient development for approximately 23 percent (4,588 jobs) of these jobs in the commercial, industrial, school, recreational, and utility portions of the project site. Phase II would result in 30 percent (5,890 jobs) in all employment sectors except utilities, which would not be developed during this phase. An additional 6,138 job opportunities (31 percent) would be provided during Phase III. Phase IV, yielding the least amount of employment of all the phases, would result in an additional 3,264 jobs (16 percent) (Table 3.6).

TABLE 3.5
RESIDENTIAL POPULATION BY DEVELOPMENT PHASE
(persons)

Land use	Phase I (1993-1995)	Phase II (1996-2000)	Phase III (2001-2005)	Phase IV (2006-2010)	Total Population
Low density ¹	2,948	4,031	4,717	5,180	16,876
Medium density ²	4,925	5,962	6,026	4,579	21,492
Medium-high density ³	312	1,848	840	936	3,936
High density ³	--	504	828	--	1,332
Total	8,185	12,345	12,411	10,695	43,636

¹ Assumes 3.12 persons per dwelling unit. See Table 3.4 for numbers of dwelling units.

² Assumes 2.7 persons per dwelling unit. See Table 3.4 for numbers of dwelling units.

³ Assumes 2.0 persons per dwelling unit. See Table 3.4 for numbers of dwelling units.

Source: The SWA Group.

More than 94 percent of the projected total employment would be related to proposed commercial and industrial development (Table 3.6); the number of industrial jobs would be slightly greater than the projected number of commercial jobs. The remaining six percent of total projected employment would be associated with schools, recreation facilities, and on-site utilities. Assumptions regarding number of jobs per acre of specific land uses are included in Table 3.6.

TABLE 3.6
EMPLOYMENT BY DEVELOPMENT PHASE¹
(jobs)

Land Use	Phase I (1993-1995)	Phase II (1996-2000)	Phase III (2001-2005)	Phase IV (2006-2010)	Total Jobs
Commercial:					
Community commercial ²	360	768	360	--	1,488
Town center ³	765	357	1,071	--	2,193
Neighborhood commercial ²	240	168	480	240	1,128
General commercial ²	288	576	--	--	864
Freeway service ²	--	--	--	648	648
Office commercial ⁴	836	968	836	--	2,640
Total Commercial	2,489	2,837	2,747	888	8,961
Industrial:					
Limited industrial ⁵	1,248	2,418	2,600	1,976	8,242
General industrial ⁶	560	322	378	280	1,540
Total Industrial	1,808	2,740	2,978	2,256	9,782
Total Schools⁷	75	250	212	113	650
Total Recreation⁸	26	63	26	7	122
Total Utilities⁹	190	--	175	--	365
Total Jobs	4,588	5,890	6,138	3,264	19,880

¹ Does not include construction-related employment or residents working out of their homes, such as telecommunications specialists, brokers, agents, sales representatives, child care providers, and writers.

² Assumes 24 jobs per acre.

³ Assumes 51 jobs per acre.

⁴ Assumes 44 jobs per acre.

⁵ Assumes 26 jobs per acre.

⁶ Assumes 14 jobs per acre.

⁷ Assumes 2.5 jobs per acre.

⁸ Assumes 1 job per 5 acres of park, 30 jobs per golf course, and 10 jobs per marina.

⁹ Assumes 5 jobs per acre for the sewage and water treatment acres.

Source: The SWA Group.

3.6 WILLIAMSON ACT CONTRACT CANCELLATION REQUIREMENTS

The proposed project would require a number of cancellations of Williamson Act contracts for parcels within the project site. The California Land Conservation Act of 1965 (commonly known as the Williamson Act) established a voluntary tax incentive program for preserving agricultural and open space lands. A property owner enters into a ten-year contract with the county that places restrictions on the land in exchange for tax

3.0 PROJECT DESCRIPTION

savings. The property is taxed according to the income it is capable of generating from agriculture and other compatible land uses rather than according to its full market value. Williamson Act contracts are renewed automatically each year unless they are canceled or one party files a Notice of Nonrenewal.

A total of 3,243.07 acres within the project site are under Williamson Act contracts (Figure 3.9). The applicant has filed applications to cancel Williamson Act contracts for a total of 2,919.5 acres. **Notices of Nonrenewal have also been filed for the 2,919.5 acres.** Cancellation of Williamson Act contracts is addressed in Section 4.1 of the EIR.

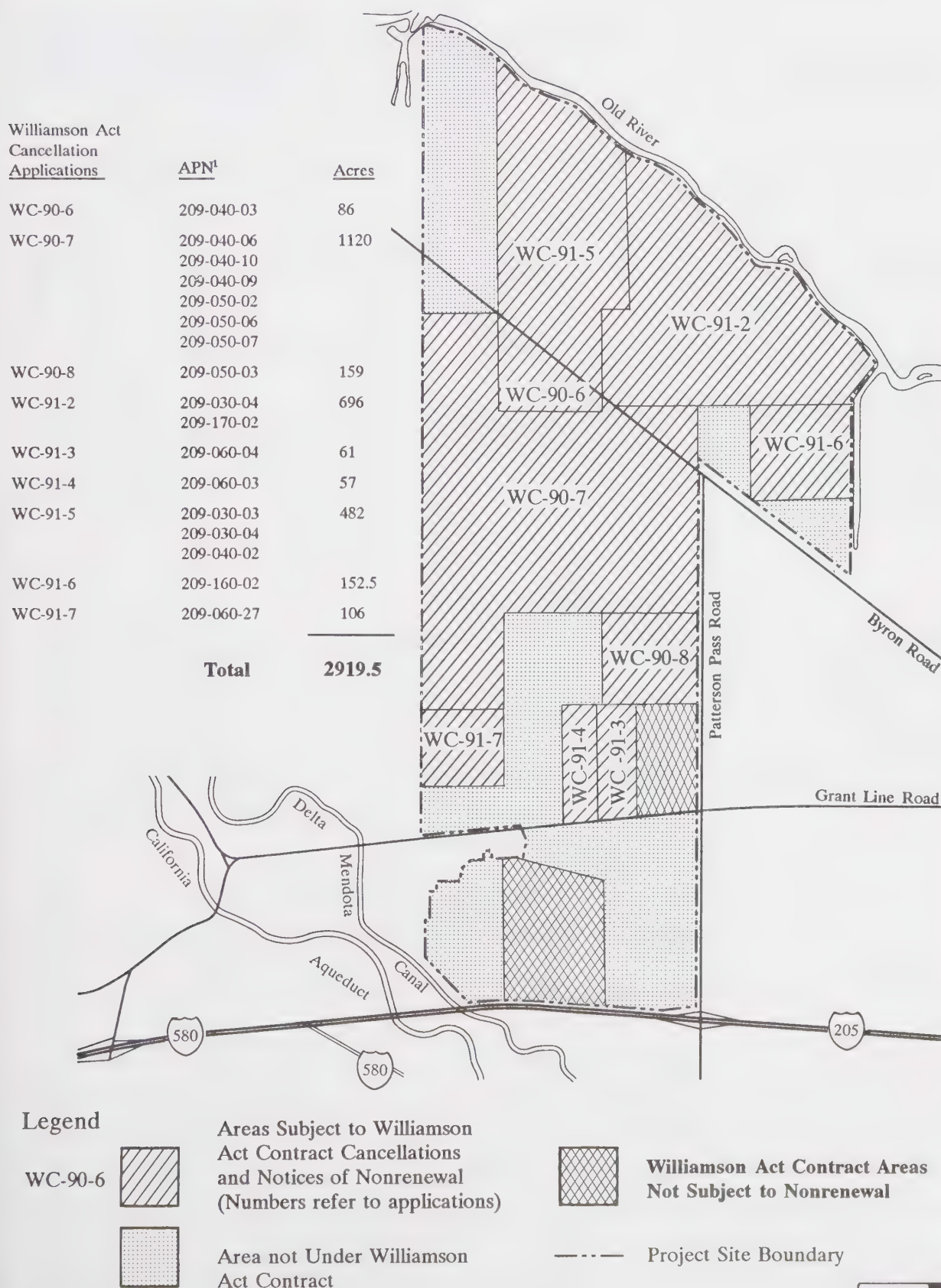
3.7 SPONSOR OBJECTIVES

Development of the project is proposed in accordance with specific objectives. The project sponsor, Trimark Communities, would develop the site in accordance with the following objectives:

- To accommodate a portion of the development pressure forecast for the region in a well-organized and orderly development pattern over a 17-year buildout period;
- To create opportunities for Bay Area employers to relocate and expand;
- To provide a balance of jobs and housing;
- To provide a complete transportation system, including transit facilities;
- To provide a New Town with its own services, parks, schools, and shopping facilities;
- To have an identity tied to Old River, Mountain House Creek, a pedestrian-oriented town center, and tree-lined street patterns characteristic of Valley communities;
- To minimize impacts on agricultural land by locating on land less valuable for agriculture due to the presence of less important soils; adverse wind and erosion costs; and sloping terrain;
- To minimize impacts on agricultural land by developing in the far western portion of the County and at densities that would preserve more valuable agricultural areas;
- To provide business parks that would accommodate quality employers and that would be located where adequate roads and services are available, outside of floodplains, and with adequate acreage to meet business park needs;

WILLIAMSON ACT CONTRACT CANCELLATIONS

Figure 3.9



¹APN: Assessor Parcel Number

3.0 PROJECT DESCRIPTION

- To preserve, restore, and/or relocate all wetlands and wildlife habitat within the project boundaries at an enhanced level on not less than a 1-to-1 basis. To protect 100-year floodplain areas near Old River from the 100-year storm by raising levees above the 100-year flood level or by fill;
- To provide a modern sewage treatment system, with all effluent and storm drainage discharges meeting current high water quality standards;
- To create a Community Services District to provide water, sewer, drainage, roads, parks, fire protection, police services, and other services at no cost to the County.

3.8 REQUIRED APPROVALS

Development of the Mountain House New Town would require a number of approvals from Federal, State, and local agencies and districts. These approvals would be required throughout the planning and development stages of the project. Specific permits and approvals are listed in Table 3.7 for project implementation.

TABLE 3.7
REQUIRED APPROVALS

Agency	Approval	Timing
LOCAL AGENCIES: <ul style="list-style-type: none">• San Joaquin County Planning Commission and Board of Supervisors	<ul style="list-style-type: none">• Certification of Final Environmental Impact Report• Amendment of the General Plan 1995 and/or inclusion in the General Plan 2010• Approval of Specific Plan(s)• Amendments to County's zoning ordinance• Cancellation of Williamson Act contracts• Approval of vesting tentative and final subdivision maps• Approval and adoption of development agreement• Grading and building permits	<ul style="list-style-type: none">• At the General Plan stage and Specific Plan stage, if necessary• General Plan amendment stage• Specific Plan stage• General Plan amendment and Specific Plan stages• General Plan amendment stage• Tentative and final subdivision map stages• After Specific Plan stage• At grading and building permit stages

Table 3.7 - *continued*

Agency	Approval	Timing
• San Joaquin County Air Pollution Control District	• Authority to construct	• Building permit stage
• San Joaquin County Office of Emergency Services	• Regulation of use and handling of hazardous materials	• Prior to use or handling of any hazardous materials
• Local school district	• Approval of school facilities plan	• Specific Plan stage
• San Joaquin County Local Agency Formation Commission	• Approval of special districts (i.e., community facilities and community services districts)	• At time of establishment of such districts, which is likely to occur after the Specific Plan stage
• Contra Costa Local Agency Formation Commission	• Annexation to Byron-Bethany Irrigation District	• Specific Plan stage
• Alameda County	• Miscellaneous permits in connection with improvements constructed in Alameda County	• Pre-construction or building permit stage
• San Joaquin County Mosquito Abatement District	• Approval of mosquito control management plan if wetlands buffer zone is to be used for storm water retention and treatment	• Prior to use of on-site wetlands for storm water retention and treatment
• Byron-Bethany Irrigation District	• Water usage agreement	• Specific Plan stage
STATE AGENCIES: • California State Reclamation Board	• Encroachment permit for work on or adjacent to levees in Old River area	• Building permit stage
• Regional Water Quality Control Board, Central Valley Region	• National Pollutant Discharge Elimination System (NPDES) permit; and waste discharge requirements to allow discharge of wastes to surface waters; permit for land disposal and storage of effluent from wastewater facility • Water quality certification in connection with U.S. Army Corps of Engineers Section 404 permit	• Prior to any discharge likely to occur at building permit stage • Prior to building permit stage

Table 3.7 - continued

Agency	Approval	Timing
<ul style="list-style-type: none"> California Department of Fish and Game, Region 2 	<ul style="list-style-type: none"> Streambed Alteration Agreement for work within high water mark of on-site streams or rivers Management Agreement to address loss of Swainson's hawk habitat or other endangered species found on-site as specified under State endangered species regulations 	<ul style="list-style-type: none"> Prior to building permit stage Prior to building permit stage
<ul style="list-style-type: none"> California State Lands Commission 	<ul style="list-style-type: none"> For any dredging in state-owned lands or beds of navigable rivers Land use leases to allow use of state-owned lands for purposes other than dredging 	<ul style="list-style-type: none"> Prior to any dredging; likely to occur prior to building permit stage and after Specific Plan and EIR At building permit stage
<ul style="list-style-type: none"> California Department of Transportation 	<ul style="list-style-type: none"> All state highway improvements identified through Project Study Reports Encroachment permits 	<ul style="list-style-type: none"> Pre-construction or building permit stage Building permit stage
<ul style="list-style-type: none"> California Department of Real Estate 	<ul style="list-style-type: none"> Public report prior to sale of lots within a subdivision, subject to certain exemptions 	<ul style="list-style-type: none"> Prior to sale of any lots
<ul style="list-style-type: none"> California Integrated Waste Management Board 	<ul style="list-style-type: none"> Solid waste facilities permit for disposal and transfer facilities 	<ul style="list-style-type: none"> Prior to development of any solid waste disposal or transfer facilities
<ul style="list-style-type: none"> California Department of Health Services, Office of Drinking Water 	<ul style="list-style-type: none"> Permit for new water system 	<ul style="list-style-type: none"> Prior to development of on-site water system
<ul style="list-style-type: none"> California Public Utilities Commission 	<ul style="list-style-type: none"> Approval of modification to rail crossing 	<ul style="list-style-type: none"> Prior to any modifications
FEDERAL AGENCIES: <ul style="list-style-type: none"> U.S. Army Corps of Engineers 	<ul style="list-style-type: none"> Section 404 permit Section 10 permit 	<ul style="list-style-type: none"> Prior to discharge of dredged or fill material into waters of the United States Prior to work in navigable waters
<ul style="list-style-type: none"> Federal Emergency Management Agency (FEMA) 	<ul style="list-style-type: none"> Letter of map revision to remove flood hazard designation on certain low-lying areas near Old River 	<ul style="list-style-type: none"> Prior to development within previous flood hazard area
<ul style="list-style-type: none"> Federal Highway Administration (FHWA) 	<ul style="list-style-type: none"> Improvements of interstate highways 	<ul style="list-style-type: none"> After Specific Plan stage and prior to building permit stage

Table 3.7 - *continued*

Agency	Approval	Timing
<ul style="list-style-type: none"> • U.S. Coast Guard 	<ul style="list-style-type: none"> • May be involved in the approval of Aids to Navigation in the marina area 	<ul style="list-style-type: none"> • Prior to development of marina
<ul style="list-style-type: none"> • U.S. Department of the Interior, Fish and Wildlife Service 	<ul style="list-style-type: none"> • Levee reconstruction or modification; Incidental take permit/habitat conservation plan regarding endangered or threatened species prior to any activity that would constitute a take of such species 	<ul style="list-style-type: none"> • Prior to levee work

Source: Trimark Communities and Baseline Environmental Consulting, 1990.

3.9 RESPONSIBLE AGENCIES

A responsible agency is a public agency, other than the lead agency, that has discretionary approval of the project. Prior to acting on or approving a project, a responsible agency must consider the lead agency's EIR. The Notice of Preparation and the Draft and Final EIRs are reviewed by all responsible agencies. Responsible agencies for the Mountain House New Town EIR include the following:¹

Local Agencies and Special Districts

- San Joaquin County Department of Public Works
- San Joaquin County Air Pollution Control District
- San Joaquin County Local Agency Formation Commission
- San Joaquin Office of Emergency Services
- Contra Costa Local Agency Formation District
- Alameda County
- Byron-Bethany Irrigation District

State Agencies

- California Reclamation Board
- California Department of Water Resources
- California Department of Fish and Game
- California State Lands Commission
- California Department of Transportation
- California Integrated Waste Management Board
- California Department of Health Services, Office of Drinking Water
- California Department of Boating and Waterways
- California Department of Conservation
- Central Valley Regional Water Quality Control Board

Federal Agencies

- U.S. Department of the Interior, Bureau of Reclamation
- Federal Emergency Management Agency
- Federal Highway Administration
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers

¹Letters received from the responsible agencies in response to the Notice of Preparation are included in Appendix 10.3.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

4.1 LAND USE AND AGRICULTURAL ISSUES

SETTING

Existing On-Site Land Uses

The project site consists of agricultural lands extending from I-205 northward to the Southern Pacific (SP) railroad tracks (Figure 4.1-1) and continuing north to the levees bordering Old River. Of the total 4,667 acres on the site, 3,734 acres (80 percent) are used for field and row crop agriculture (e.g., alfalfa and irrigated farmland shown in Figure 4.1-1) (McCarty Company, 1990). An additional 530 acres (11 percent) are used for irrigated and non-irrigated pasture. The remaining acreage includes scattered residences, roadways, the SP railroad right-of-way, and transmission lines (Table 4.1-1). Approximately 30 residences and two large dairies are located within the project boundaries.

TABLE 4.1-1
COMPARISON OF ON-SITE CROPS WITH 1989 CROP AVERAGES
FOR SAN JOAQUIN COUNTY

Total Crop Production 1989	Project Site Acreage	Percent of Total Site Acreage	County Acreage 1989	Project Percentage of County Acreage	Total County Income (thousands \$)
Alfalfa	1,040	22	64,800	1.6	44,593
Irrigated crops ¹	2,700	58	207,283	1.3	104,078
Irrigated pasture	160	3	16,000	1.0	2,225
Non-irrigated pasture	370	8	150,000	0.25	3,459
Other ²	397	9	--	--	--
TOTAL	4,667 ³	100	438,083	--	154,355

¹ Black-eyed beans, sugar beets, yellow corn, safflower, silage, barley, oats, and wheat.

² Dairy and non-farm uses.

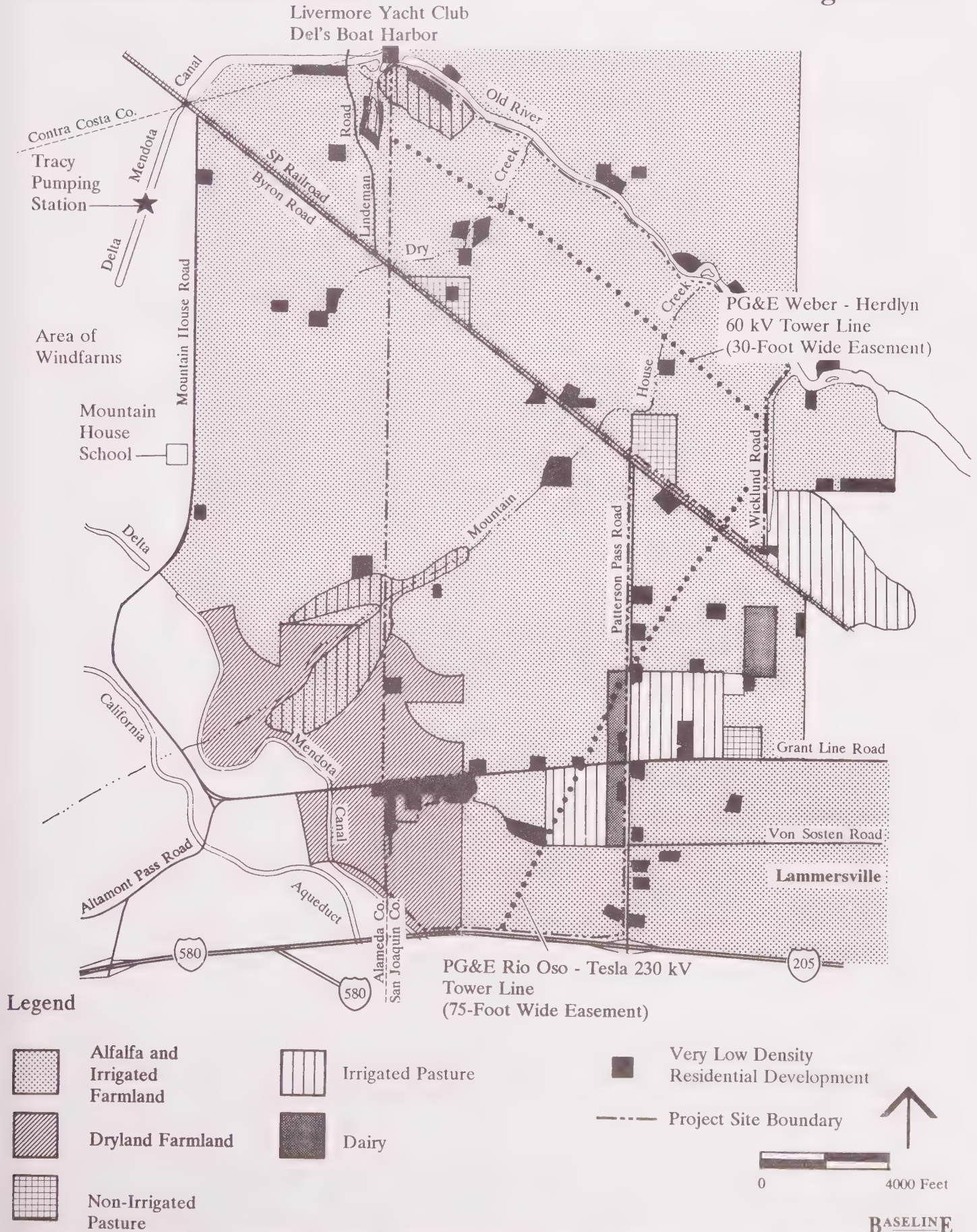
³ The acreage for specific crops varies from that shown in Table 4.12-1 due to the time of year when crop surveys were completed.

Source: The McCarty Company for Trimark Communities, 14 December 1990, and San Joaquin County Agricultural Commissioner's Office, 1990.

On-site roads include Grant Line, Byron, Kelso, and Wicklund roads (Figure 4.1-1). Roads and freeways that adjoin the project site include Patterson Pass Road and I-205. The interchange of Patterson Pass Road and I-205 is located at the project site's southeast corner. The SP railroad traverses the site in a northwest to southeast direction, parallel to Byron Road (Figure 4.1-1). The tracks lie on an embankment that is approximately six feet above the level of the surrounding land. Vehicle access across the railroad is currently limited to five crossings within the project site boundaries.

EXISTING LAND USES

Figure 4.1-1



A 230 kilovolt (kV) electrical transmission line crosses the southern and northeastern portions of the project site. This transmission line is supported by a single line of towers placed approximately one-quarter mile apart. A 60 kV electrical transmission line crosses the northern portion of the project site (Figure 4.1-1). The 60 kV line is expected to be relocated underground as part of the proposed project.

Old River, a tributary to the San Joaquin River, borders the project site on the north (Figure 4.1-1). This section of Old River is often used by recreation boaters, including water skiers. The banks of the river have been reinforced over the years and are approximately 10 feet above the surrounding landscape. Riparian areas extend south from the river bank for approximately 50 to 100 feet along the site's entire river frontage.

Dry Creek and Mountain House Creek traverse the site, flowing from the southwest to northeast into Old River (Figure 4.1-1). Portions of the creek channels have been reconstructed into farm drainage ditches. Riparian areas are located along sections of the creek corridors. U.S. Army Corps of Engineers jurisdictional wetlands are located along Dry Creek (just north of the railroad embankment) and Mountain House Creek where they flow through the center portion of the project site, and in three locations in the site's southwestern quarter. Riparian areas, wetlands, and sensitive species are discussed further in Section 4.13, Biological Resources.

Surrounding Land Uses

The site is located in the center of a regional agricultural area. Scattered residential uses and the canals of California's aqueduct system are the only non-agricultural uses adjoining the project site. Contra Costa County and Alameda County adjoin the site at its northwestern and western boundaries, respectively.

North of the site, between Old River and the Grant Line Canal, lands are in agricultural use (e.g., grain crops) (Figure 4.1-1). The Livermore Yacht Club and Del's Boat Harbor are located immediately northwest of the site in Alameda County (Figure 4.1-1). The Livermore Yacht Club is a collection of houseboats and small commercial establishments and is located along a slough of the Sacramento-San Joaquin Delta. Del's Boat Harbor provides boat launching and guest docking facilities, a snack bar, and fishing boat rentals. To the north of the marina facilities, in Contra Costa County, lands are in agricultural grain crop production.

The East Contra Costa County Airport, currently under construction, is located approximately four miles northwest of the project site. The County-operated airport is expected to serve general aviation aircraft, but will ultimately serve transport and business jets.

Immediately west of the project site, lands are in agricultural row crop production similar to that of the project site. Mountain House Road, located approximately one mile west of the project site boundary, serves as an approximate boundary between the level valley land to the east and the rising foothills of the Diablo

Range to the west. Mountain House School is located on Mountain House Road approximately midway between Byron Road and the foothills (Figure 4.1-1).

The low foothills west of the site are used for grazing and are also used for wind farms. The electrical-power generating windmills, averaging 50 feet in height, are arranged in rows to catch the prevailing winds that flow

through the Altamont Pass area. The foothills also provide the relative elevation needed for the aqueduct systems which carry water to Southern California. Tracy Pumping Station, the intake for the Delta-Mendota Canal, is located west of the site on Kelso Road (Figure 4.1-1). The Delta-Mendota Canal, a part of the Federal Water Project, conveys water southward through the foothills and passes through the site at the southwestern corner. The canal is currently fenced to keep out cattle. The California Aqueduct, which also flows near the project site, starts downstream of the Clifton Court Forebay and parallels the Delta-Mendota Canal (Figure 4.1-1). Both canals flow to the south and cross under I-205 near the southwestern corner of the project site. The canals are each approximately 100 feet wide and are open, concrete-lined channels. The canals are used for bank fishing by many people.

A cluster of approximately 30 single-family residences is located on Grant Line Road adjacent to the western edge of the site (Figure 4.1-1). These units are considered a non-conforming use in an area that is designated for agricultural use in the County's 1995 General Plan and Revised Draft General Plan 2010 (San Joaquin County, 1988 and 1991a).

Level agricultural land with scattered residences is located east of the project site. This area includes: alfalfa and irrigated farmland; irrigated pasture; a dairy; and native pasture (Figure 4.1-1). Lammersville, an unincorporated community, is located approximately one-half mile east of the project site. Lammersville includes approximately 210 residences on average 1.5-acre lots and the Lammersville Elementary School. The **western edge of the** City of Tracy is approximately ~~six~~ **3.3** miles to the ~~southeast~~ **east** of the project site (Figure 3.1).

South of I-205, lands are in agricultural use, planted in alfalfa and pasture land. A dairy is located on South Patterson Pass Road just south of I-205 (Figure 4.1-1). The California Aqueduct and the Delta-Mendota Canal occupy a large portion of the area south of the site between I-205 and I-580.

Agricultural Uses

Crop Production

Crops currently grown on the project site include alfalfa for hay, irrigated crops (e.g., corn, sugar beets, dry edible beans), and grains (e.g., wheat, oats, and barley). The site also contains irrigated and non-irrigated pasture. Table 4.1-1 provides a comparison of the crop acreage at the project site with total County crop production. In 1989, irrigated crops represented 58 percent of the acreage under cultivation on the project site, and alfalfa represented 22 percent (McCarty Company, 1990). The amount of irrigated crops on the project site represents 1.3 percent of the County total.

The 1989 San Joaquin County Agricultural Crop Report indicates that other than pasture land, alfalfa is the single leading field crop in the County, covering approximately 64,800 acres (San Joaquin County Agricultural Commissioners Office, 1990). The amount of alfalfa on the project site represents approximately 1.6 percent

4.1 LAND USE AND AGRICULTURAL ISSUES

of the total alfalfa acreage in the County. Irrigated and non-irrigated pasture on the site totals 530 acres, representing 1.25 percent of the countywide acreage.

The average 1989 yield of alfalfa in San Joaquin County was 6.90 tons per acre with a total yield of 447,000 tons for a value of \$44,593,000. The average yield of irrigated crops in the County ranged from a low of 1.02 tons/acre for black-eyed beans to 2.75 tons/acre for sugar beets. Total value of irrigated crops in the County was \$104,078,000. The total amount of agricultural acreage under production in the County during 1989 was 677,170 acres compared to 647,600 in 1988. Based on 1989 figures, land under production at the project site represents approximately one-half of one percent of the overall agricultural land currently in production in San Joaquin County. **Staff at the County Agricultural Commissioners Office indicated that the monetary value of the total 1990 annual crop production at the project site was \$2,037,645. An estimated total value to the economy could be as high as \$5,094,112 (University of California Extension, 1978), using a multiplier of 2.5 to account for the number of times a dollar turns over in the agricultural economy.**

Chemical Applications

The agricultural operations of the site include chemical spraying for pest control and fertilization. The types of chemicals and chemical applications are directly related to the type of crop. The chemical properties and the method of application vary, as some crops require aerial application either by helicopter or fixed-wing aircraft, while others are treated with a ground application. In the vicinity of the Mountain House site, ~~the primary method of both aerial and ground application is are used.~~

TABLE 4.1-2

CHEMICAL APPLICATIONS ON THE PROJECT SITE AND ADJOINING LANDS

Chemicals Pesticide (P)/ Herbicide (H) (Brand Values)	Restricted (R)/Non- restricted (N)	Method of Application	Crops
Pen Cap (P) ¹	R	Aerial	Alfalfa
Lasso (H) ²	N	Directly into soil	Beans, corn
Treflan (H) ^{1,3}	N	Directly into soil	Beans, alfalfa
Velpar (H) ^{1,3}	N	Directly into soil	Sugar beets
Lorsban (P) ¹	N	Aerial	Alfalfa
Comite (P) ²	N	Aerial/ground	Corn
MCPA (H) ¹	R	Aerial	Grain
Banvel (H) ²	R	Aerial	Grain
Sulfur dust (P) ¹	N	Aerial/ground	Sugar beets
Disyston (P) ⁴	R	Aerial	Alfalfa, beans, grain
Orthene (P) ⁴	N	Aerial/ground	Beans

¹ Used in the past and currently.

² Used in the past; not used currently.

³ Used in early spring.

⁴ Used in the past; probably not used currently.

Note: Restricted chemicals require a permit from the County prior to use; non-restricted chemicals do not require a permit for use.

Source: San Joaquin County Department of Agriculture, 1989.

Aerial application is primarily by helicopter (Cooksey, 1991). Based on crop information for the project site and discussions with the County Agricultural Commissioners Office (Jensen, 1991), the chemicals used on the project site and on lands within a one-mile boundary of the project site are those identified in Table 4.1-2.

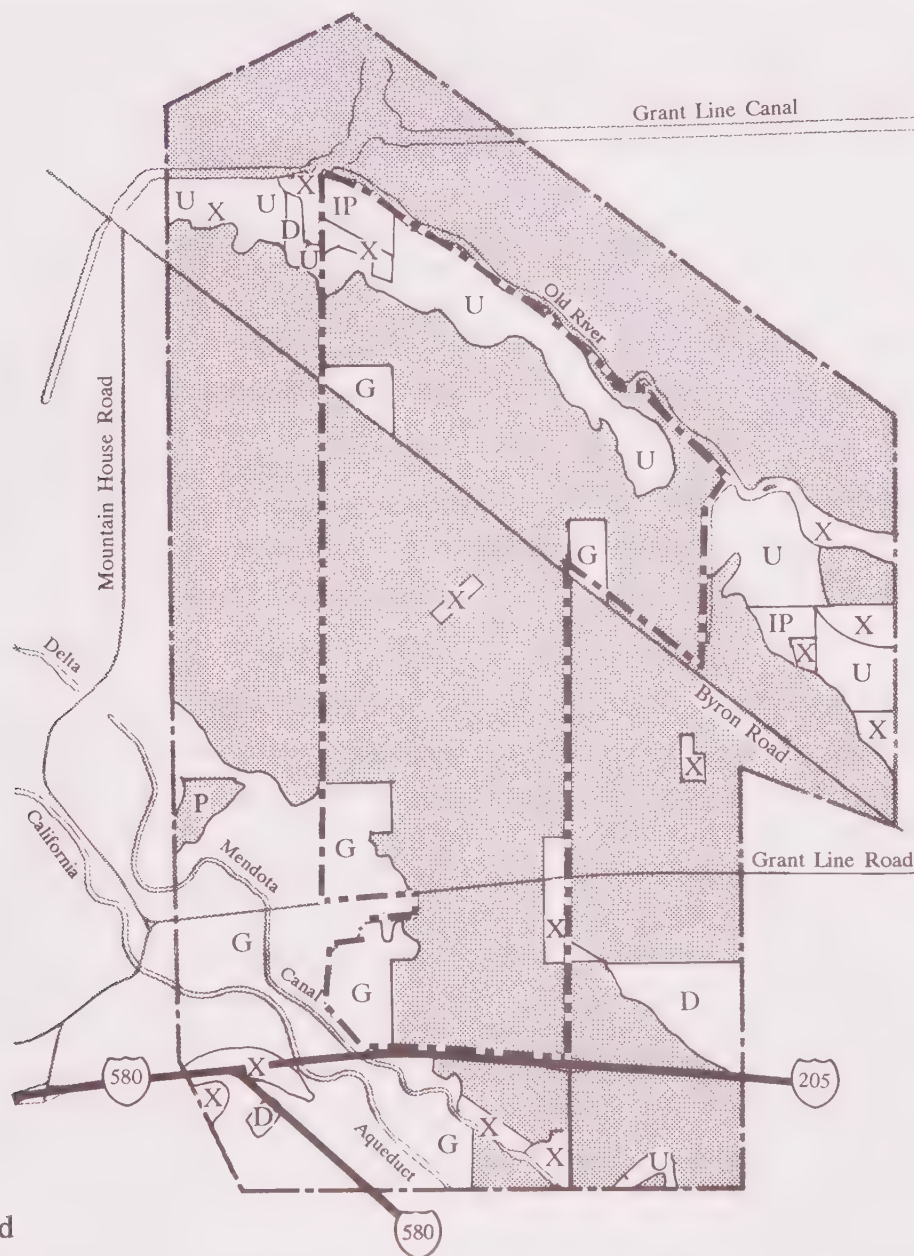
Agricultural chemicals are classified as "restricted" or "non-restricted." As indicated in Table 4.1-2, four of the chemicals used at the project site are classified as restricted and thus require a permit from the County Agricultural Commissioners Office. When issuing the permit, the County Agricultural Commissioners office considers several factors, including proximity of residences, adjoining land uses, and wind direction.

Chemicals classified as non-restricted are not considered to pose a health hazard (Jensen, 1991). However, some of the chemicals contained in the non-restricted pesticides/herbicides applications will cause a rash and irritation to humans and may create a nuisance for adjoining residents, when applied. An example is sulphur dust, a chemical used on sugar beets. When this chemical is applied near residences, the San Joaquin County Agricultural Commissioners Office often receives complaints because of the chemical's odor and fallout from aerial application. Residue of the chemical, particularly when it falls on the water surface of swimming pools, heightens residents' perception of the use of the chemical and potential hazards associated with it (Jensen, 1991). Uninformed residents often equate odor and the fallout with a health hazard. Odor associated with chemical application is one of the major complaints received at the County Agricultural Commissioners office (Jensen, 1991).

Soils

The Important Farmland Inventory System was initiated in 1975 to supplement the Land Inventory and Monitoring Activity of the Soil Conservation Service (SCS) of the U.S. Department of Agriculture. The California Department of Conservation, Office of Land Conservation, has completed the San Joaquin County Important Farmland Map, based on the results of a countywide soil survey. The map is in draft form awaiting County approval. The mapping program uses the eight classifications described below. The minimum mapping unit is ten acres, except for the "grazing land" category, which is 40 acres. Areas smaller than the minimum mapping units are incorporated into the surrounding map classification (California Department of Conservation, 1984). Categorical definitions of important farmlands were developed by SCS to recognize the land's suitability for agricultural production rather than reflecting only the physical and chemical characteristics of the soil. The categories include: 1) Prime Farmland; 2) Farmland of Statewide Importance; 3) Unique Farmland; 4) Farmlands of Local Importance; 5) Grazing land; 6) Urban and Built-up lands; 7) Other lands; and 8) Land Committed to Non-agricultural Use (California Department of Conservation, 1984).

The majority (3,601 acres or approximately 77 percent) of the project site has been designated Prime Farmland on the draft Important Farmland Map (Figure 4.1-2 and Table 4.1-3). Prime Farmland is land that has the best combination of physical and chemical characteristics for the production of crops. This category of farmland has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops within the last three years. To qualify as Prime Farmland, the farmland must meet several criteria, including but not limited to: a dependable water supply; ability to hold



Legend

Soils Rating



Prime

G - Grazing

IP - Irrigated Pasture *

D - Development

U - Unique

X - Other Lands

(ranchettes, dairy, native vegetation)

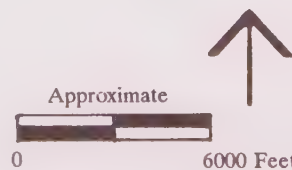
----- Approximate One-Mile Study Boundary

----- Project Site Boundary

* Department of Water Sources Catalog, designation to be determined by County.

Note: San Joaquin Map is in draft form and requires County approval.

Source: California Department of Conservation, Office of Land Conservation, April 1991.



BASELINE

a specific soil temperature range; retention of an acid-alkali balance; availability of an adequate water table; allowance of a minimum rooting depth; a condition of infrequent flooding; and specific permeability (California Department of Conservation, 1984). Crops grown on Prime Farmland on the site include alfalfa, corn, sugar beets, and grain.

Approximately eight percent of the site (369 acres) has been designated Unique Farmland (Figure 4.1-2 and Table 4.1-3). Land of this designation does not meet the criteria for Prime Farmland or Farmland of Statewide Importance. This designation applies to land that is currently used for the production of specific high economic value crops. Within the project site, Unique Farmland is primarily located in the floodplain near Old River (Figure 4.1-2). Unique Farmland has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Crops planted on Unique Farmland may include oranges, olives, avocados, rice, and grapes (California Department of Conservation, 1984). However, these crops are not currently planted within the Unique Farmland portion of the project site. Instead, this area is used for irrigated row crops and alfalfa (Figures 4.1-1 and 4.1-2).

The remaining categories in the rating system include Farmland of Statewide Importance (S), Grazing (G), Irrigated Pasture (IP), Urban and Built-Up Land (D), Other Lands (X), and Farmland of Local Importance (L). This latter classification is applied to land that may be important to the local economy due to its productivity. There are no lands on the project site designated as Farmland of Local or Statewide Importance. Small areas of G, IP, and X lands are mapped within the project site (Figure 4.1-2). Large areas of Prime Farmland have been identified adjoining the project site (Figure 4.1-2).

Williamson Act Lands

Numerous parcels within the project site and in western San Joaquin County are currently under Williamson Act contracts (Figure 4.1-3). The Williamson Act allows landowners to enter into an agreement with the County whereby the property owner agrees to maintain the land in agriculture or open space for a period of at least ten years. In exchange, the landowners are allowed a reduction in property taxes for the subject parcel. The Williamson Act contract allows a property owner to apply for cancellation of the contract at any time. Approval of the cancellation request is made by the County Board of Supervisors, based on certain findings, discussed below. Under the cancellation process, the property owner is subject to penalties for canceling the contract prematurely.

TABLE 4.1-3

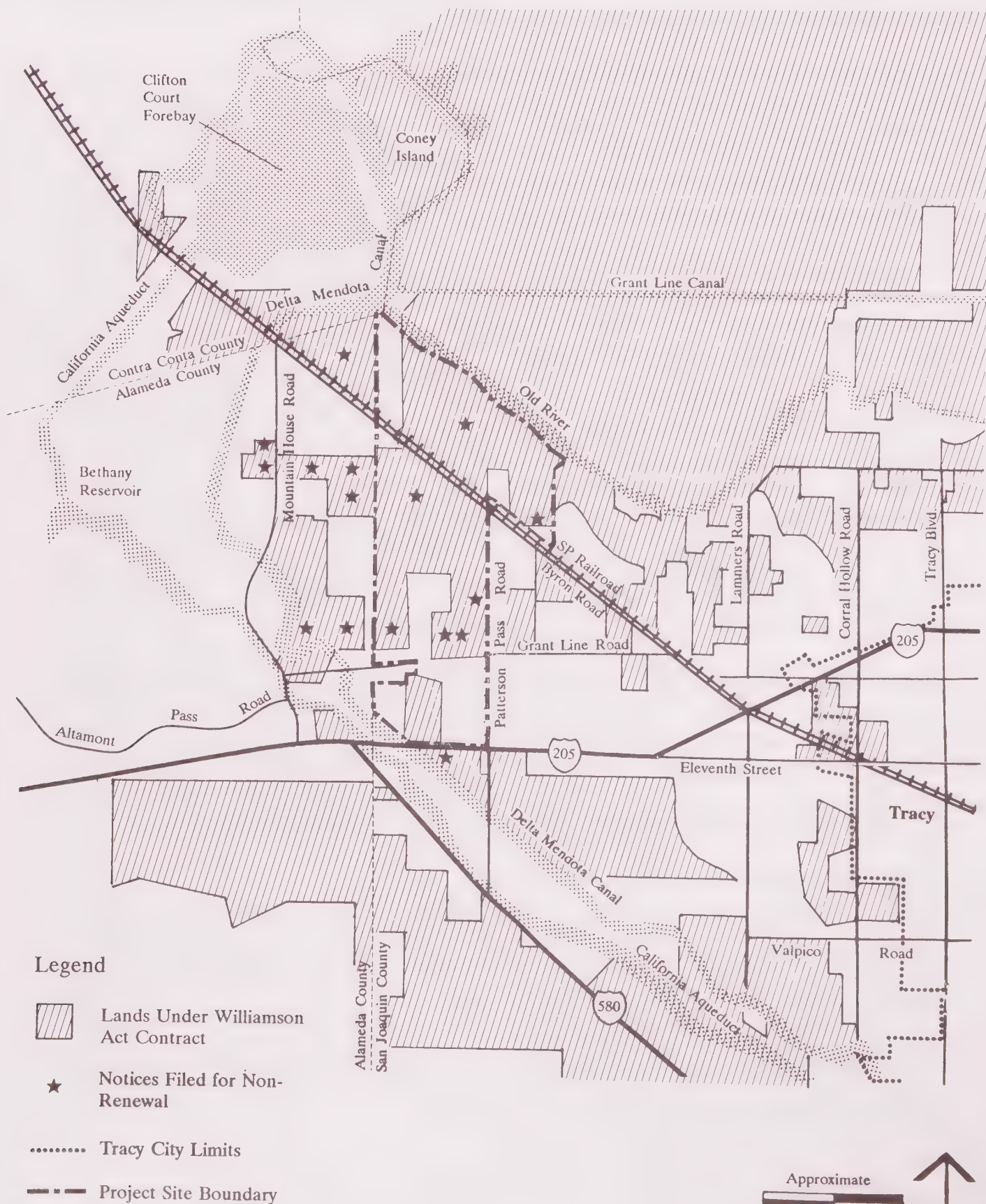
FARMLAND CATEGORIES MOUNTAIN HOUSE NEW COMMUNITY

Category	Acreage	Percent of Total
Prime farmlands	3,601	77
Grazing lands	492	11
Unique farmlands	369	8
Irrigated pasture	64	1
Urban and built-up lands	12	<1
Other lands	129	3
Total	4,667	100

Source: California Department of Conservation, 1991.

WILLIAMSON ACT CONTRACT LANDS

Figure 4.1-3



The decision as to cancellation of the Williamson Act contracts will be made by the Board of Supervisors after a public hearing as required by law. To approve cancellation, the Board must find either that cancellation is consistent with the purposes of the Williamson Act or that cancellation is in the public interest. In each case, the Board must make certain subfindings, as specified in the Act. (See discussion under Impact 4.1-1). The Board will make its decision based upon all of the evidence before it in the cancellation proceedings. The findings ultimately made by the Board must be supported by substantial evidence in the record of those proceedings.

The Act also allows a property owner to file a Notice of Nonrenewal. This Notice alerts the County that the property owner will take the lands out of contract ten years from the date of notice. Property taxes are reassessed at a new rate immediately upon the filing of non-renewal. Under this process, the property owner does not pay penalties. The amount of assessment is calculated at a rate that will reach market value at the end of the contract period.

A total of 3,243.07 acres of the project site is currently under Williamson Act contract. Of this total, Notices of Nonrenewal have been filed on 2,919.5 acres, representing 17 parcels; those contracts expire in ~~December 1997~~ **1999** and ~~December 1998~~ **2000 (Rowe, 1992)**. However, the applicant has proceeded to file for cancellation of the contracts to provide greater flexibility in project planning (Gross, 1991). Action on the cancellation would be expected to occur after this DEIR has been certified and ~~prior to the~~ **after** approval of the General Plan Amendment, should these two actions not occur simultaneously.

An agricultural land survey was conducted as part of this analysis to determine the number of acres in agricultural use, crop types, Williamson Act status, and development potential. The survey area consisted of the project site and lands within a one-mile radius (Figure 4.1-4 and Table 4.1-4). The survey was mailed to 61 property owners with parcels exceeding 40 acres. Forty-one property owners responded, resulting in a 67 percent survey return. The entire survey area constituted 16,300 acres, and the respondents represented 73 percent of the survey area acreage (11,972 acres). Acreage within the study area currently in crop production totaled 7,968 acres; 880 acres are currently fallow (not in production); 1,932 acres are retained for pasture use; and 1,192 acres for other uses.

The survey showed that within a one-mile radius of the project site, 18 property owners who responded to the survey are currently under Williamson Act contract. Five of these property owners have filed a Notice of Nonrenewal, representing 1,743 acres of land. Two of these property owners, representing 910 acres, have parcels immediately adjoining the project site in Alameda County. The survey also disclosed that several landowners outside the project site wished to develop their land rather than retain it for agricultural use. Many of those surveyed claimed that lack of water and high operating costs made it economically infeasible to continue farming. Many of the property owners have owned their land for many years and wish to sell their land for retirement purposes. The survey results also indicated that many of the property owners currently lease the land and live elsewhere.

BOUNDARY OF AGRICULTURAL LAND SURVEY

Figure 4.1-4

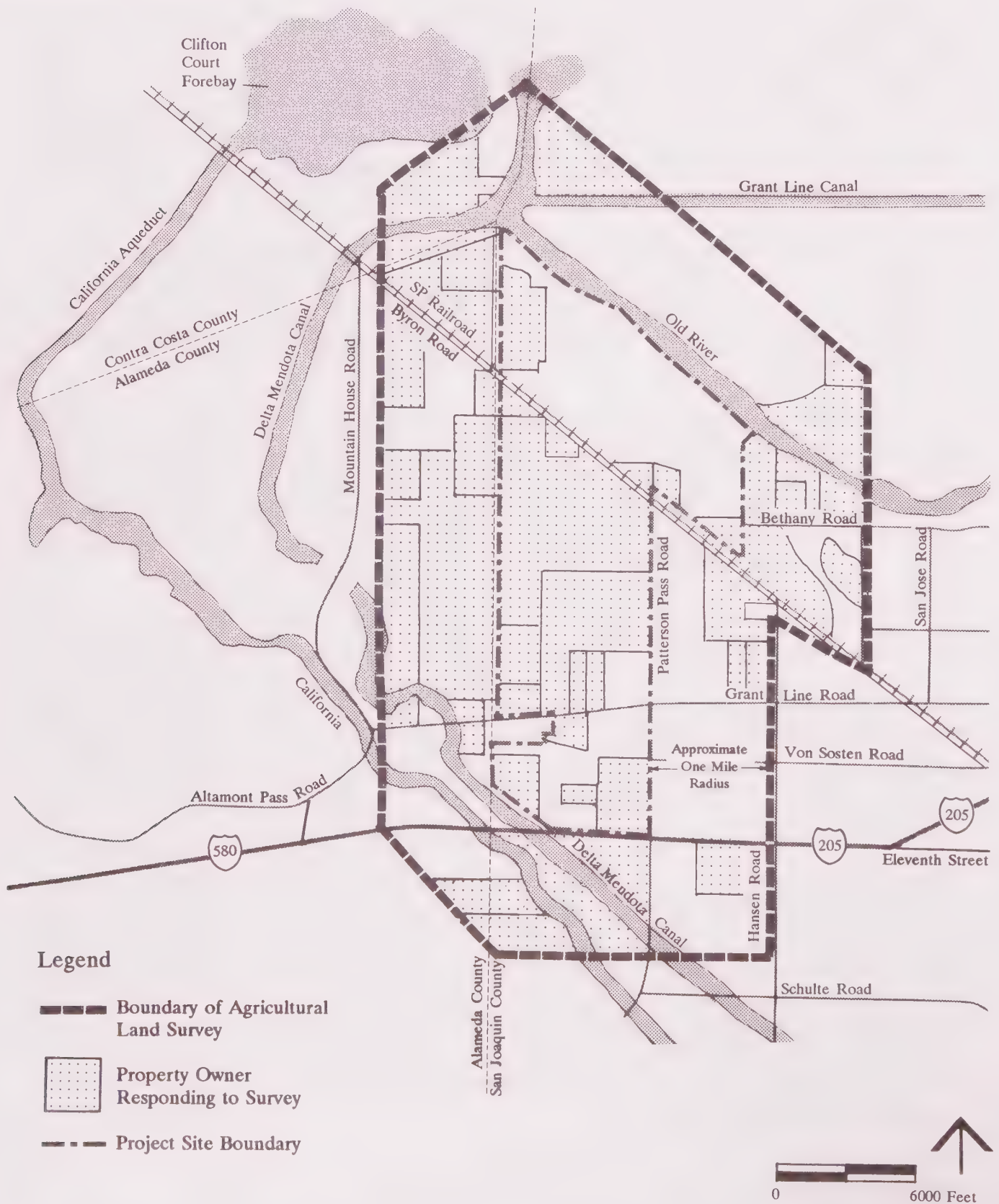


TABLE 4.1-4
SUMMARY OF AGRICULTURAL LAND SURVEY RESULTS¹

SURVEY RESULTS				
Total number of property owners surveyed in study area: ²	61			
Total number of responses:	41 (67% of total)			
Total acreage in study area:	16,300			
Acreage of project site:	4,667			
Acres owned by respondents:	11,972 (73% of total)			
Status	Study Area		Project Site	
	(acres) ³	(percent)	(acres) ⁴	(percent)
<u>Land Use:</u>				
Crop production	±7,968	67	2,220	48
Pasture/grazing	±1,932	16	214	4
Fallow	±880	7	1,836	40
Other uses ⁵	±1,192	10	397	8
Total	11,972	100	4,667	100
<u>Williamson Act:</u>				
Parcels under contract	35		17	
Acreage under contract	8,678	72	3,243	69
Acreage under nonrenewal	4,662	39	2,919	63

¹ Survey undertaken in March and April 1991.

² Study area includes project site and area within a one-mile radius and pertains to those properties exceeding 40 acres.

³ Includes only that acreage for which responses were received (i.e., 11,972 acres).

⁴ Acreage for crops corresponds to that shown in Table 4.13-1 based on a June 1991 survey.

⁵ Dairies, structures, roads, recreation, water courses.

IMPACTS AND MITIGATION MEASURES

For the purpose of this DEIR, development of the project site would constitute a significant impact in the following instances: prime soil would be removed from agricultural production and land use conflicts associated with noise, odor, chemical drift, and trespassing and vandalism would occur. The following discussion briefly summarizes land use impacts related to noise, odor, and public health and safety. However, a complete discussion of these types of impacts can be found in the relevant sections of this DEIR.

Impact

- 4.1-1 **Development of the proposed project would result in the loss of approximately 3,600 acres of Prime Farmland and would require cancellation of 2,920 acres currently under Williamson Act contract. Cancellation could result in the premature loss of this resource.**

Approximately 77 percent of the project site is considered Prime Farmland as identified in the Draft Important Farmlands Map for San Joaquin County produced by the State Department of Conservation, Office of Land Conservation (1991). An additional 369 acres at the northern end of the site have been defined as Unique Farmland. No on-site agricultural uses have been proposed for the project site.

Development of the project site would create discontinuous patterns of urban development from existing urban areas, although an argument ~~could~~ **can** be made that creation of a new town would create a new contiguous land pattern within the new town's boundaries. The site is outside of Tracy's Sphere of Influence. Development at the project site could encourage future development of properties between the project site and the City of Tracy or between the project site and the unincorporated community of Lammersville. **For example, in late 1991, a pre-application for a 157-acre commercial development just outside and adjacent to the project site was filed with San Joaquin County Community Development Department.** Lands in Alameda County to the west of the project site could also develop due to pressure created by the project and potential land use conflicts with adjoining agricultural operations. Large tracts of vacant lands exist that are contiguous to urban development **that could be developed first. Development of the alternative site adjacent to the City of Tracy (Section 5.3), if available and otherwise suitable, would provide contiguous urban development and occupy land with less acreage under Williamson Act contracts. The presence of the Delta-Mendota Canal, Clifton Court Forebay, and the California Aqueduct to the northwest of the site would reduce development pressures on lands within Contra Costa County.**

The site is currently designated for Agriculture in the existing County 1995 General Plan and development of the project would not be consistent with this designation **without a General Plan Amendment.** In the event that the Board of Supervisors redesignates the land for urban development in the County General Plan 2010, the cancellation of Williamson Act contracts for an alternative use would be consistent with the General Plan. The County General Plan 2010 is expected to be adopted in 1992. The County's Revised Draft General Plan 2010 (San Joaquin County, 1991a) identifies enough vacant acreage (designated for urban uses) within the County to accommodate about 1.2 million people, or 336,000 more people than the projected 2010 population. This vacant acreage is located within five new communities (including the proposed project) proposed for unincorporated areas and at the fringes of existing cities where a significant amount of new development could occur. Even without approval of the new communities, the County would have more than enough acreage to accommodate the projected 2010 population.

As discussed in the Setting section, a survey of property owners indicated that several of the adjoining property owners in Alameda County have already filed Notices of Nonrenewal for Williamson Act contracts in the anticipation of the project extending into Alameda County. **If cancellation requests were made for these lands and approved by Alameda County, the lands could be removed earlier from agricultural production.** Additionally, adjoining property owners in San Joaquin County ~~are also likely to~~ **may** remove agricultural lands from operation due to future land use conflicts that would occur between urban uses at the project site and adjoining agricultural operations. As shown in Figure 4.1-1, the project site is now surrounded by agricultural lands.

The Mountain House project is planned to be developed in four phases over a period of 17 years. **Current** County policy requires the cancellation of Williamson Act contracts prior to implementation of a Specific Plan (San Joaquin County Planning Title, Chapter 19, Section 9-2354, 1985). Although only a portion of the site would be developed during Phase I, based upon the **above existing** policy, all contracts would have to be canceled whether the property under contract is developed entirely in Phase I or in the later phases. The project proponent is requesting that this policy be deleted from the County Planning Title. **The County Board of Supervisors is considering deleting this requirement from the Development Title. This action has not been adopted by the Board of Supervisors although the County Planning Commission recommended this change to the Board at its 16 January 1992 meeting.** If this policy is deleted, contracts would not have to be canceled prior to submittal of the Specific Plan.

In order to cancel the contracts, the Board of Supervisors must make the following findings:

- "(a) The cancellation is consistent with the purposes of the Williamson Act. In order to make this finding the board shall make all of the following findings:
 - (1) The cancellation is for land on which a Notice of Nonrenewal has been served pursuant to Section 51245 of the Government Code;
 - (2) The cancellation is not likely to result in the removal of adjacent lands from agricultural use;
 - (3) The cancellation is for an alternative use which is consistent with the applicable provisions of the County General Plan;
 - (4) The cancellation will not result in discontiguous patterns of urban development;
 - (5) There is no proximate non-contracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or development of the contracted land would provide more contiguous patterns of urban development than development of proximate non-contracted land; or
- (b) The cancellation is in the public interest. In order to make this finding, the board shall make all of the following findings:
 - (1) Other public concerns substantially outweigh the objectives of the Williamson Act;
 - (2) There is no proximate non-contracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or development of the contracted land would provide more contiguous patterns of urban development than development of proximate non-contracted land." (Ord. No. 3174)

4.1 LAND USE AND AGRICULTURAL ISSUES

If the Board of Supervisors does not make the findings for cancellation, the applicant could postpone development plans until the contracts automatically expire in 1997 and 1998. Notices of Nonrenewal have been filed by the applicant for all of the properties for which cancellation is requested.

Mitigation Measure

4.1-1(a) *The loss of 3,600 acres of Prime Farmland is an unavoidable adverse impact. The only full mitigation measure for the above impact would be denial of the proposed project.*

~~4.1-1(b) *All required findings must be made by the Board of Supervisors in order to approve the Cancellation of the Williamson Act contracts.*~~

4.1-1(b) The applicant should be assessed an impact fee for each acre converted to an urban designation (whether residential, industrial, or commercial use) to be applied toward the purchase of development rights on agricultural lands or to support land trusts that purchase conservation easements on agricultural land. Such a fee system should be identified in the County's Development Title in compliance with the recommended policy supporting such a fee as included in the County's Revised Draft General Plan 2010 (San Joaquin County, 1991a).

Impact

4.1-2 Conflicts between urban/rural land uses would occur, particularly where agricultural operations abut residential development. Such conflicts could result in conversion of agricultural lands outside the project site boundaries to non-agricultural uses.

The project proposes development of a continuous edge of single-family residential uses along the western boundary of the project site (Figure 3.7). Lands immediately west of the site in Alameda County are currently in agricultural use (Figure 4.1-1). Project site development would create land use conflicts with existing agricultural operations (e.g., complaints by residents regarding chemical drift from aerial applications, chemical odors, dust, and equipment noise). Nearby farmers could be subject to vandalism, trespassing, and illegal trash dumping from project residents.

The proposed project would also introduce new urban uses at the eastern edge of the project site that would adjoin existing agricultural operations (Figure 4.1-1). The proposed uses in this area of the project site are primarily industrial and commercial, which would not result in as many agricultural land use conflicts as residential uses. A small area of Medium-High Density Residential and a high school would be located at the site's eastern edge which could result in land use conflicts with adjoining agricultural operations. Patterson Pass Road, a major arterial, would serve as a narrow buffer between uses at the site's eastern edge (Figure 3.7) and nearby agricultural lands. Old River and the Delta-Mendota Canal in the north, and I-205 to the south would serve as partial buffers between the project's urban uses and nearby agricultural operations.

Depending on the layout of the field and wind conditions, aerial application of certain chemicals may result in conflicts with residents, primarily conflicts associated with equipment noise and chemical drift. Prevailing winds are from the west. Thus, new urban development at the western edge of the project site would be of most concern. Helicopter spraying is a common method used in agricultural areas where adjoining or nearby residential development restricts an aircraft's maneuverability. Federal regulations restrict fixed-wing aircraft

from flying over a "congested area."¹ If an applicator must fly over residences to enter and exit a field, then a flight plan must be filed with the Federal Aviation Administration (FAA). This plan is to include a map of existing land uses surrounding the field, the route to be flown, and escape routes (Code of Federal Regulations, Title 14, Part 137). Additionally, some local ordinances require operators to notify nearby residents when spraying will occur (Boys, 1991). When flying over congested areas, all aircraft must fly at least 500 feet above buildings.

The maneuverability of a helicopter allows the pilot to spray to the end of the rows and turn around within the confines of the field. This maneuverability contrasts with fixed-wing aircraft that must first ascend to a safe altitude, turn around, and then descend. Although application by helicopter may be more effective in areas of residential development, there are problems associated with this type of application. Helicopter noise, vibration, and downwash² created by rotors are major problems when the aircraft is operating in close proximity to development (Hanson, 1991). It is conceivable that aerial spraying would continue on lands west of the project site. If fields are planted in an east-west direction, the helicopter pilot would be turning around at the end of the rows in proximity to the on-site residences since the pilots fly parallel to the rows rather than perpendicular to them (Cooksey, 1991). The safety and noise problems can be further exacerbated because the FAA does not require the operator to maintain a minimum horizontal distance from buildings (Hanson, 1991).

Aircraft noise is a common complaint by residents living adjacent to farmland (Boys, 1991). During the spring and summer months when aerial spraying activities are the busiest, pilots begin spraying shortly after dawn (Boys, 1991). Noise from either helicopter or fixed-wing aircraft in the early morning hours can be annoying for residents who live close to the fields.

In addition to increased levels of noise, residents living along the site's western boundary could be subject to blowing dirt and debris as a result of the downwash, as well as vibration from the helicopter rotor or a fixed-wing aircraft engine that is not properly muffled. If aerial spraying occurs near residences, the vibration created by the rotor blades and aircraft engines can cause windows to rattle.

It is likely that if the project were approved, aerial applications for adjoining agricultural lands would have to be modified and application of certain chemicals restricted within a range of homesites. Given the strong, prevailing westerly wind pattern during the spring and summer months, residents would be downwind from agricultural operations west of the site. Although aerial applicators are not permitted to spray in wind speeds exceeding 12 mph, nearby residents could be affected by chemical drift and odors associated with various agricultural chemical applications (Boys, 1991). This nuisance could result in complaints to the County Agricultural Commissioners office and/or the FAA and would require the aerial operator and/or farmer to:

¹No uniform definition by the FAA has been provided for "congested area." Each case is looked at individually. The ambiguity is currently being tested in the courts (Dixon, 1991; Hansen, 1991).

²Downwash: strong downward air currents created by the rotation of the rotor blades.

4.1 LAND USE AND AGRICULTURAL ISSUES

1) change the method of application, 2) change the type of chemicals used in the application, or 3) change the direction of the rows. Complaints by residents regarding aerial applications have been common (Jensen, 1991). Verifying and reviewing the complaints are time-consuming for the staff of the County Agricultural Commissioners Office, the FAA (relative to flight operations and safety), and the aerial operator (Jensen, 1991; Foreman, 1991; Cooksey, 1991).

Theft and vandalism are also common land use conflicts when housing development occurs adjacent to agricultural operations. Farmers near housing developments have reported increased incidents of damage to farm equipment. Open fields become places for trespassing by pedestrians and off-road vehicle users. Agricultural lands often become illegal dumping grounds for residential refuse. Crop pilferage is common when development occurs adjacent to orchards or produce fields (Jones and Stokes Associates, Inc., 1991).

Based upon the above discussion, a buffer of 1,000 feet located between the agricultural lands to the west and the development would provide an adequate distance to alleviate potential problems associated with chemical drift, dust from tilling and helicopter downwash, and aircraft noise. A 1,000 foot wide buffer coupled with the persistent westerly winds would allow for the dispersion of dust particles and chemicals prior to reaching the residences. Helicopter noise at 1,000 feet ranges between 90-100 decibels. This noise would be extremely annoying for residents without adequate attenuation. As discussed above, aerial spraying begins at dawn and continues through the day until wind speeds reach 12 mph. Sound walls are not effective for attenuating an aerial noise source. Thus, a buffer width of 1,000 feet would reduce helicopter noise to a range of 70-80 decibels which is considered a tolerable noise level at this distance. A wide buffer would also provide a suitable separation to discourage residents from trespassing and illegally dumping trash on agricultural land.

Should the proposed project be approved, the following mitigation measures to reduce land use conflicts should be incorporated into the project plans. While these mitigation measures would not completely mitigate the impacts, they would assist in reducing their significance. An additional benefit would be protection of some on-site Prime Farmland.

Mitigation Measures

- 4.1-2(a) *A 1,000 foot-wide buffer area should be provided along the western boundary of the project site and included in the proposed General Plan amendment. This buffer could incorporate non-residential uses such as the golf course, an equestrian center, a trail system, and/or a regional park. A roadway could extend through this buffer. The buffer area could also accommodate an agricultural park whereby residents of the new community could have individual plots for raising fruits and vegetables, or a single operator practicing organic farming could use the land. If adjoining lands in Alameda County eventually convert to urban uses, the recommended buffer area could be developed for other uses when it is no longer needed. **Alternatively, the recommended buffer area could have development rights permanently restricted by use of a conservation easement or placement of the buffer acreage in an agricultural land trust.***

- 4.1-2(b) *Fencing should be installed along the perimeter of the western boundary to prevent trespassing and littering.*
- 4.1-2(c) *The deed of each newly created parcel in proximity to agricultural operations should include a clear statement to inform new buyers that they are purchasing land or homes in an agricultural area.*
- 4.1-2(d) *On-site residents should be notified that the County has adopted a Right-to-Farm ordinance to protect farmers from nuisance suits as a result of normal farming practices. The County should enforce this ordinance and ensure that proper farming practices occur to minimize conflicts.*
- ~~4.1-2(e) *The applicant should be assessed an impact fee for each new unit or parcel (whether residential, industrial, or commercial use) to be applied toward the purchase of development rights on agricultural lands or to support land trusts that purchase conservation easements on agricultural land. Such a fee system should be identified in the County's Development Title in compliance with the recommended policy supporting such a fee as included in the County's Revised Draft General Plan 2010 (San Joaquin County, 1991a).*~~

Impact

- 4.1-3 **Land use conflicts between proposed on-site land uses and adjoining land uses could result from odors and noise associated with agricultural practices, traffic, and on-site activities.**

Noise impacts for existing on-site and off-site residents would be primarily associated with increased traffic to the area. New residents living in close proximity to agricultural operations would experience noise from farm machinery, which may be perceived as a nuisance to many residents. Complaints from project residents could deter farming operations near the proposed project and eventually lead to removal of agricultural lands from operation. A discussion of noise impacts associated with the development is found in Section 4.16 of this DEIR.

Odors could be particularly noticeable to off-site residents living downwind from such sources as the proposed sewage treatment plant. Residents of the early phases of the project living near the on-site dairies located on Patterson Pass Road could experience offensive odors. Residents living near agricultural operations may also complain about odors associated with chemical applications. As stated previously, a particularly offensive odor is sulfur dust which is used on some crops grown in the area.

Mitigation Measure

- 4.1-3 *All recommended mitigation measures for potential odor and noise impacts, as described in Sections 4.15 and 4.16 of this DEIR, should be incorporated into the proposed project.*

Impact

- 4.1-4 The Delta-Mendota Canal and on-site irrigation canals could present a public safety hazard without proper fencing and screening.**

The Delta-Mendota Canal extends across the most southwesterly corner of the project site. A low fence to deter livestock extends along both sides of the canal. The presence of the canal in close proximity to the potential residential development provides an attractive nuisance, particularly to juveniles. The existing fence would not deter persons from attempting to climb over it to reach the canal. Until such time that the entire project site is developed, many of the existing irrigation ditches would be left in place. These ditches, if left unfenced, could also provide a public safety hazard, particularly to children.

Mitigation Measure

- 4.1-4** *Project plans should incorporate fencing and cautionary signage of major waterways, particularly where the canals and irrigation channels are in close proximity to residential areas.*

Impact

- 4.1-5 The project site would be subject to frequent overflights of airline traffic using the East Contra Costa County Airport.**

The project area is located in proximity to the traffic pattern area for the airport. Runway alignment may cause landing and takeoff approaches to occur over the project site.

Mitigation Measure

- 4.1-5** The Specific Plan should address overflights to ensure that land use conflicts do not occur. For example, the proposed low-density residential uses in the southwest portion of the project site should be replaced with commercial or industrial uses. The recommended 1,000-foot buffer area (Mitigation Measure 4.1-2(a)) would partially mitigate this impact if provided on-site. Additionally, policies should be incorporated into the Specific Plan limiting building heights which may be located in the flight path. If land uses are changed at the Specific Plan stage, an additional General Plan amendment may be necessary.

4.2 ZONING AND GENERAL PLAN POLICIES

SETTING

This section addresses existing and proposed zoning for the project site, and the project's relationship to the existing 1995 General Plan and to the policies of the County's Revised Draft General Plan 2010, as published in March 1991. Both the current 1995 General Plan and the Revised Draft General Plan 2010 include a number of policies related to new communities such as the proposed project. The status of the Comprehensive Planning Program for the County is addressed below.

Draft 2010 San Joaquin County Comprehensive Planning Program

San Joaquin County is currently preparing a Comprehensive Planning Program which includes updating Volumes I, II, and III of the General Plan and the County's Development Title. Volume I addresses goals, objectives, and policies regarding existing and future development within the County. Volume II provides a profile of land uses, public services, and physical conditions for the city fringes and unincorporated communities. Volume III includes Technical Appendices with information on existing conditions within the County and forms the basis for the analyses in Volumes I and II. The Draft Development Title includes County Zoning Regulations, Subdivision Regulations, Development Regulations, Infrastructure Standards, Financing for Infrastructure and Services, Development Agreements, Natural Resource Regulations, Safety Regulations, Williamson Act Regulations, and Enforcement Regulations.

In March 1991, the County began preparation of the Environmental Impact Report (EIR) on the Draft Comprehensive Planning Program. That EIR will address the environmental impacts associated with implementation of the goals and policies of the documents listed above. Based on the recommendations of this DEIR, the Draft Comprehensive Planning Program documents could undergo revisions prior to final adoption by the County Board of Supervisors which is expected to occur by early 1992. For the purposes of this DEIR, the Draft Comprehensive Planning Program is evaluated, as well as the policies of the County's adopted Land Use/Circulation Element. It is possible that the Final Comprehensive Planning Program will not be adopted until after certification of the Final EIR for the proposed project. If this sequence of events were to occur, the EIR on the Comprehensive Planning Program would need to clarify that the status of the proposed project was changed from "proposed" to "adopted."

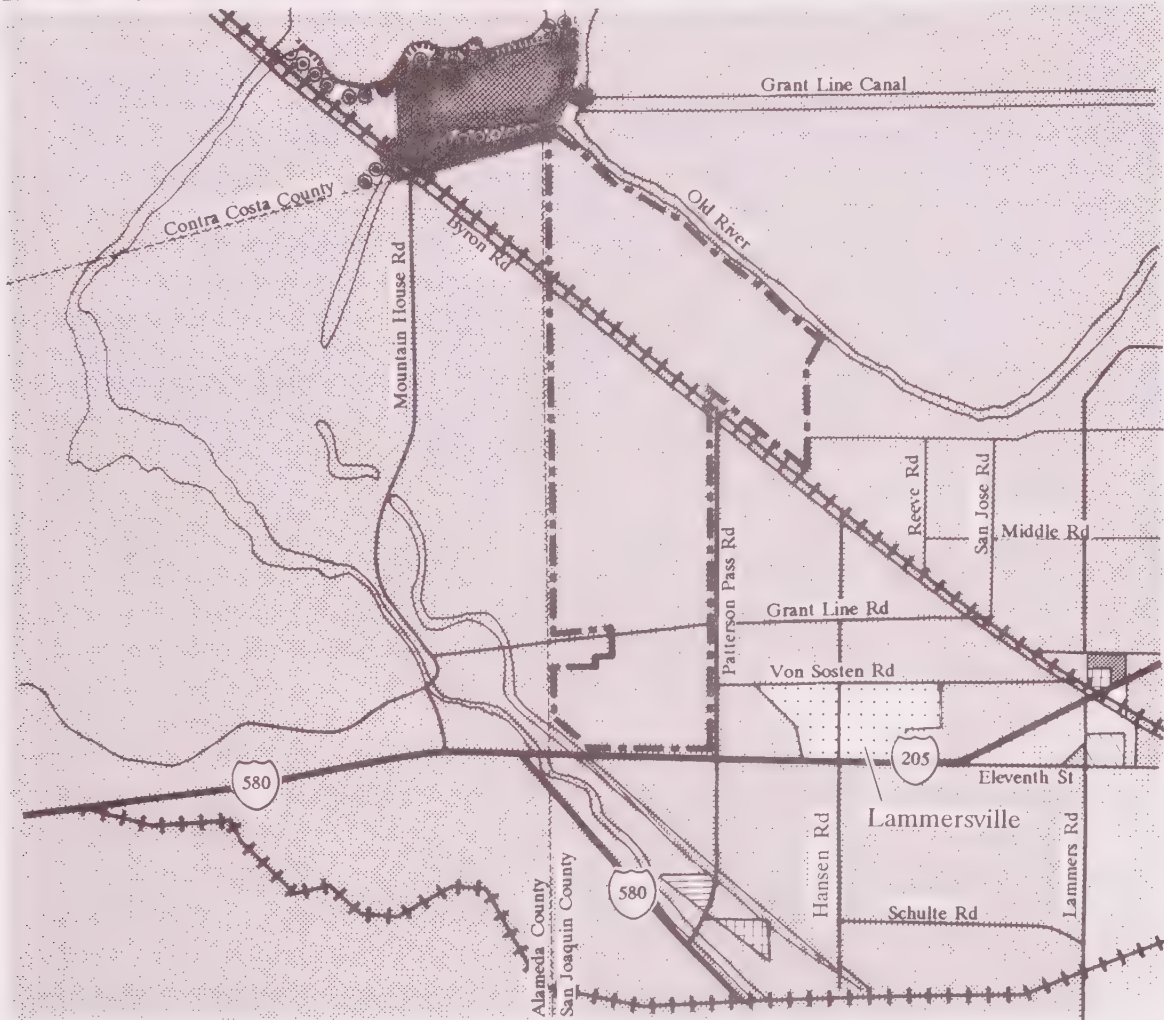
Existing 1995 General Plan and Zoning Designations for Project Site

The existing 1995 General Plan designation for the project site is General Agriculture (AG) (Figure 4.2-1). The existing Land Use/Circulation Element of the County General Plan (San Joaquin County, 1976) states that the Agriculture category includes areas containing high quality soils and where water is available or is expected to be available for irrigation, thus enabling prime land to remain in agricultural production. Foothill pasture areas which support livestock production are also included in the Agriculture designation.

The AG land use designation allows a maximum density of one primary dwelling unit per 20 gross acres. Additional dwelling units for farm employee housing and farm labor camps are allowed. Typical uses within the AG areas include crop production, feed and grain storage and sales, aerial crop spraying, and animal raising and sales. Permits are required within AG areas for resource recovery, dairy and canning operations, stockyards, and animal feedlots and sale yards.

EXISTING GENERAL PLAN DESIGNATIONS FOR SITE AND ENVIRONS

Figure 4.2-1



Legend

All Counties

 Agricultural (San Joaquin, Alameda and Contra Costa County)

San Joaquin County

 Rural Residential (R-R)

 Residential (Low to Medium - High)

 General Industrial (I/G)

 Limited Industry (I/L)

 Neighborhood Commercial (C/N)

 General Commercial (C/G)

 Public (P)

Contra Costa County

 Public/Semi-Public (PS)

 Parks and Recreation (PR)

 Open Space (OS)

 Delta Recreation

Note: Boundaries are approximate. (Residential densities include low density, medium density and medium high density).

0 8000 Feet

BASELINE

Zoning for the project site is AG-40 which is General Agriculture with a 40-acre minimum parcel size (Figure 4.2-2). The County's Development Title states that the AG zone is established to "preserve agricultural lands for the continuation of commercial agricultural enterprises" (San Joaquin County, 1991b).

Permitted uses within the AG zoning district include family residential, employee housing, general animal raising, family food production, educational animal projects, small child care services, crop production, cultural and library services, dairies, small group care facilities, and minor utility services. Other land uses require use permits or other special permits prior to development, or are not permitted at all. The maximum height for dwellings within the AG zone is 35 feet, and 18 feet for buildings that are accessory to the dwelling. No height limit exists in this zoning district for "other" agricultural structures, such as barns, silos, or grain towers.

General Plans and Zoning Designations for Surrounding Area

General Plan (1995) and zoning designations for San Joaquin County, Alameda County, and Contra Costa County apply to areas surrounding the project site to the south and east, west and northwest, respectively (Figure 3.2).

San Joaquin County

Within San Joaquin County, the predominant General Plan (1995) land use designation surrounding the project site is General Agriculture (Figure 4.2-1). The nearest non-agricultural land use designation applies to the rural community of Lammersville, approximately 1,200 feet (0.2 mile) east of the project site. The Lammersville community is designated Rural Residential (R-R) (Figure 4.2-1) in the 1995 General Plan. East of Lammersville at the western edges of the City of Tracy, other non-agricultural General Plan designations include Medium-High Residential, Medium Residential, Low Residential, General Industry, Limited Industry, Neighborhood Commercial, General Commercial, and Public Lands (Figure 4.2-1). The City of Tracy city limits are approximately ~~3.5~~ **3.3** miles east of the eastern project site boundary (Figure 4.2-3).

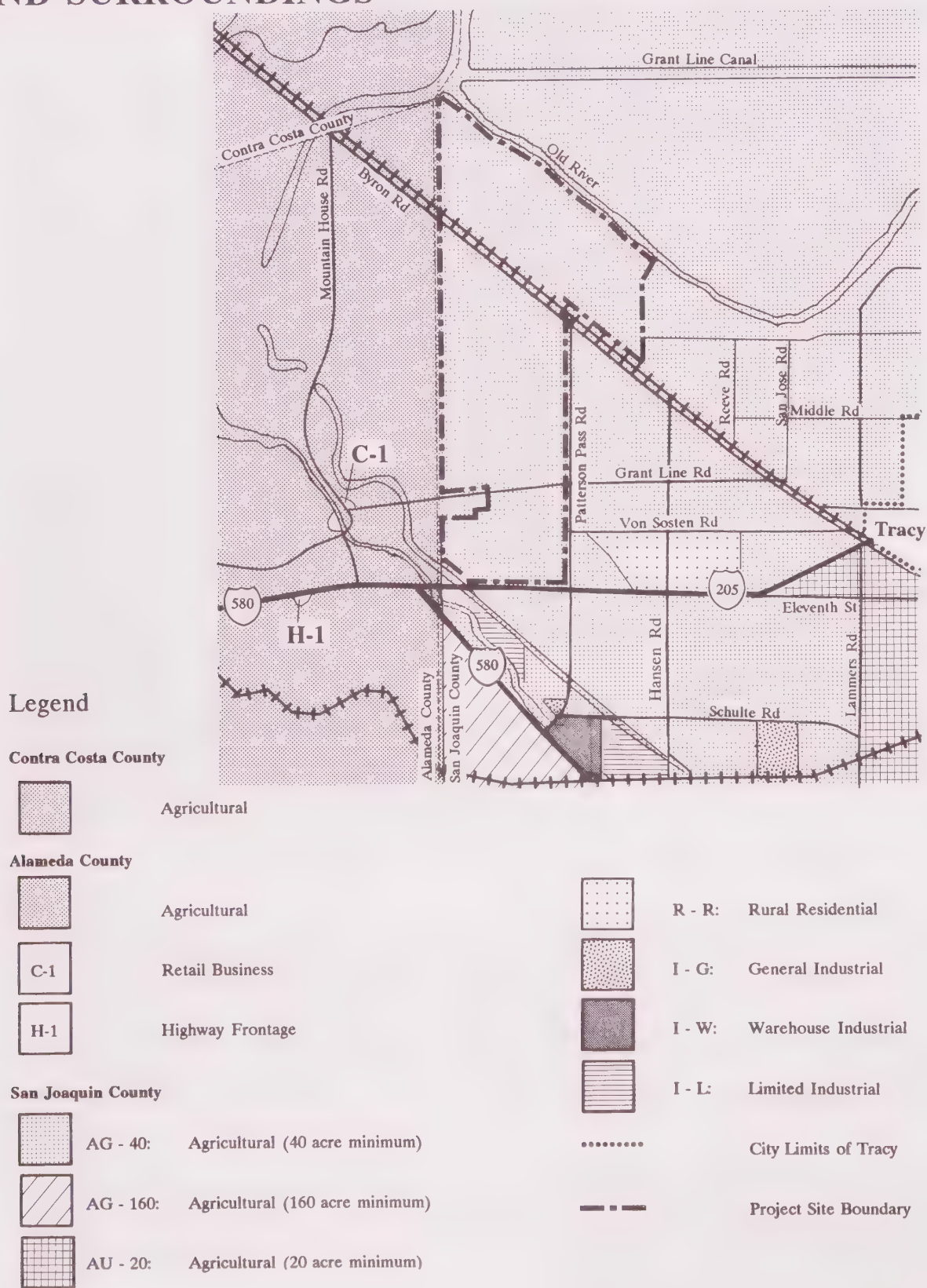
Alameda County

The Alameda County General Plan designation for the area west of the project site is Agricultural (Figure 4.2-1). The zoning category that applies to this designation is Agriculture (A) (Figure 4.2-2). Two non-agricultural zoning districts are located within the Agricultural zoning; one area is zoned for Retail Business (C-1) and a second area is zoned for Highway Frontage (H-1) (Figure 4.2-2). The Retail Business zoning district, approximately one mile west of the project site, allows retail stores, offices, banks, repair shops, self-service laundries, and restaurants (Alameda County, 1990). The maximum allowable height for this district is 45 feet.

The Highway Frontage district of Alameda County has been established to protect selected areas adjacent to major roads for travel-related businesses. Restaurants and taverns are permitted subject to Site Development Review. Additional conditional uses such as service stations are also allowed (Alameda County,

EXISTING ZONING FOR SITE AND SURROUNDINGS

Figure 4.2-2

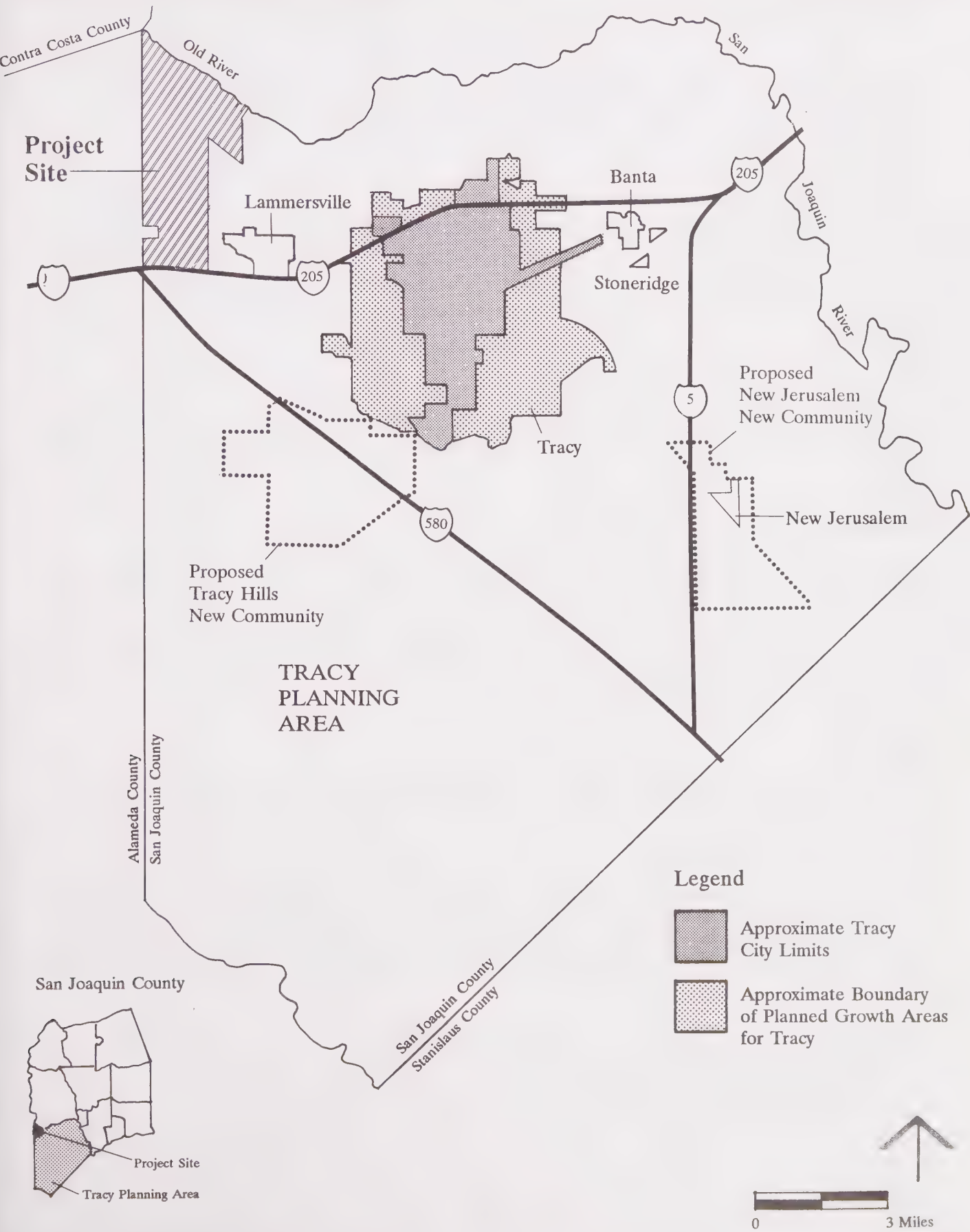


Source: Zoning Maps for Contra Costa, San Joaquin, and Alameda Counties.
Agricultural Zoning for Contra Costa County includes A-2, A-3, and A-4 Zoning.

BASILINE

TRACY PLANNING AREA

Figure 4.2-3



Source: San Joaquin County, 1989c and General Plan 2010 Map.

1990). At the present time, the Highway Frontage area southwest of the site (Figure 4.2-2) has one abandoned gas station and is used informally for a park-and-ride facility.

Contra Costa County

Contra Costa County General Plan designations apply to the area northwest of the project site; the area is designated **Delta Recreation, Public/Semi-Public, Parks and Recreation, and Agricultural** (Figure 4.2-1). Zoning for this area includes A-2, A-3, and A-4 zoning districts which are all agricultural with varying minimum lot areas (Figure 4.2-2). The A-2 district requires a minimum of five acres; the A-3 district requires a minimum of ten acres; and, the A-4 district requires a minimum of twenty acres (Contra Costa County, 1989).

San Joaquin County General Plan Policies

Many policies related to New Communities (including the proposed project) and future development within San Joaquin County are included in the County's Draft Comprehensive Planning Program, and are addressed below.

IMPACTS AND MITIGATION MEASURES

The CEQA Guidelines indicate that a project will normally have significant adverse impacts if it conflicts with adopted land use policies of the community where it is located. For the purpose of this DEIR, the following are considered potentially significant planning and zoning impacts 1) a proposed use that could not be approved by the local agency (within its permitted jurisdiction) because of conflict with the General Plan land use designation or the zoning district where the project is located; and/or 2) a project that is not consistent with the land use policies of the County General Plan.

Impact

4.2-1 The project would conflict with many of the County's proposed policies of the Revised Draft General Plan 2010 as well as with policies of the adopted Land Use/Circulation Element of the General Plan.

The County's Revised Draft General Plan 2010 contains numerous policies related to the proposed project site. The San Joaquin County Planning Division has on file a complete listing of all policies relating to the new town proposal; however, only the "new community" policies and other policies that may be in conflict with the proposed project have been included in Table 4.2-1. Policies of the existing Land Use/Circulation Element of the County General Plan are addressed in Table 4.2-2. The major policies with which the project is in conflict relate to the following:

- Removal of prime agricultural land
- Lack of identifiable neighborhoods
- Insufficient neighborhood commercial areas

TABLE 4.2-1

PROJECT'S RELATIONSHIP TO POLICIES OF SAN JOAQUIN COUNTY GENERAL PLAN 2010 (DRAFT)¹

Policy	Project's Relationship to Policy	Mitigation Measure
GROWTH ACCOMMODATION		
18. New communities shall:		
(a) be adequately sized in order to provide a full range of services, urban infrastructure, and job opportunities;	The proposed 4,667-acre development would include a diverse mixture of residential, commercial, industrial, and institutional uses to comply with this policy.	None necessary.
* (b) be located so that growth is directed away from prime agricultural land and other significant environmental resources;	The proposed project would not comply with this policy as it would remove over 3,600 acres of Prime Farmland and would direct growth into an area that is currently used almost exclusively for agricultural production. Prime farmland at the fringes of the project site could also be impacted due to growth-inducing impacts from the project.	Refer to Mitigation Measures in Section 4.1 of this DEIR, numbers 4.1-1 and 4.1-3(a) through (g).
(c) be developed at urban densities;	The proposed development would include a diversity of residential densities. The lowest density proposed by the project would be an average of 4.5 dwelling units per gross acre, typical of suburban housing. ²	None necessary.
* (d) be served by community water, sewage disposal, and terminal storm drainage systems;	The proposed project would be served by community water, sewage disposal, and a terminal storm drainage system to respond to this policy.	None necessary.

¹ Policy numbers directly correlate with those of the Draft General Plan 2010 and only apply if the proposed project would require amending the 2010 Plan.

² Gross density includes residential streets which generally account for 20 to 30 percent of the total land area. All residential densities referred to are gross densities.

* This policy is also included in the existing Land Use/Circulation Element of the San Joaquin County General Plan (San Joaquin County, 1976).

Table 4.2-1 - *continued*

Policy	Project's Relationship to Policy	Mitigation Measure
(e) be site planned and designed to include identifiable neighborhoods with a network of pedestrian open spaces within each neighborhood as well as connecting neighborhoods, commercial areas, and employment centers;	<p>The proposed plan partially responds to this policy by providing residential neighborhoods that are served by schools and community parks. Neighborhood commercial areas are limited to four locations (ranging in size from 5 to 15 acres) as compared with a total of 12 neighborhood school and park locations.</p> <p>Only one commercial neighborhood center is adjacent to a proposed open space corridor. Otherwise, pedestrians would be required to follow streets for access to neighborhoods, commercial areas, and employment centers. The applicant has expressed a desire to include pedestrian cut-throughs on cul-de-sacs to provide direct pedestrian access to streets.</p> <p>A map identifying pedestrian routes has been prepared, which shows a pedestrian path along a portion of Old River, along Mountain House Creek, and along utility easements south of Grant Line Road. These routes do not provide direct access to neighborhood and commercial centers.</p>	<p>Some neighborhood commercial centers should be included so that they are within an acceptable walking distance of residences (e.g., ¼ to ½ mile). Specific numbers and location for such centers can be identified in the Specific Plan.</p> <p>A new pedestrian plan should be prepared and implemented that follows new open space corridors as well as roadways and which connects neighborhood commercial centers and primary employment areas.</p>
* (f) provide a variety and choice of housing for all socio-economic segments of the community;	The proposed land use plan reflects a variety of housing types keyed to the proposed industrial/commercial land use mix. However, the least expensive housing at the site may not be affordable to low-income residents of the County.	The Specific Plan should clarify the provision of an adequate housing mix.
(g) maintain a close balance between jobs and housing;	The proposed land use plan illustrates a close jobs-housing balance although there is no implementation program as part of the General Plan amendment.	The Specific Plan should identify a jobs-housing balance.

Policy	Project's Relationship to Policy	Mitigation Measure
<p>* (h) contain a circulation system that provides for automobiles, pedestrians, bicycles, and public transit;</p> <p>(i) be located and designed to ensure that they will continue to be distinct communities, separate from existing communities;</p> <p>(j) not adversely affect the fiscal resources of nearby cities or the County;</p>	<p>The project application identifies a circulation system for automobiles, bicycles, and pedestrians, but does not include a map identifying public transit routes. The proposed pedestrian system is limited to small areas of the site. Circulation is discussed in greater detail in Section 4.14 of this DEIR.</p> <p>As currently proposed, the new community would be a distinct community surrounded by existing agricultural land and open space. However, the site's proximity to the residential area of Lammersville (0.2 miles to the east) and the community of Tracy (4.6 3.3 miles to the east) could result in connection with these communities in the future. Such a connection is highly possible due to the absence of open space or agricultural buffer areas within the site at its perimeter.</p> <p>Refer to Section 4.9 of this DEIR. The proposed project may require more in General Fund-financed service expenditures than generated in General Fund revenues, if the non-residential components of the project build out more slowly or to a lesser degree than anticipated by the applicant.</p>	<p>The proposed pedestrian system should be expanded to include new open space corridors that connect neighborhood centers. Bicycle routes should follow open space corridors and roads that are two lanes as well as four lanes. Bicycle access to and along Old River should be included. A conceptual public transit plan should be identified by the project sponsors at the Specific Plan stage. Other mitigation measures are included in Section 4.14 of this DEIR.</p> <p>A buffer area of at least 1,000 feet should be included along the site's western boundary to protect adjoining agricultural lands in Alameda County. Industrial and agricultural uses should be planned along the site's eastern edge near Patterson Pass Road.</p> <p>Growth-inducing impacts and recommended mitigation measures are addressed in Section 6.2 of this DEIR.</p> <p>Refer to Section 4.9 of this DEIR. The County should monitor demand for new services and revenue generation during buildout of the New Town to assure that expenditures are offset by new revenues. As the basis of this monitoring activity, the net fiscal benefit of the project to the County should be estimated annually through, and after, buildout. Depending on the results of the monitoring, adjustments can be made in service delivery, fees and charges, and/or use of other financing mechanisms.</p>

* This policy is also included in the existing Land Use/Circulation Element of the San Joaquin County General Plan (San Joaquin County, 1976).

Table 4.2-1 - *continued*

Policy	Project's Relationship to Policy	Mitigation Measure
(k) ensure mechanisms for public services' and facilities' financing of on- and off-site improvements for each phase of development;	Refer to Sections 4.9 and 4.10 of this DEIR. The project would conform with this policy due to the requirement for a Specific Plan.	Specific infrastructure plans would be required at the time of the Specific Plan. Because of the uncertainty regarding market acceptance of the proposed project, and therefore of its buildout schedule, the County should require that alternative financing and management entities be in place as early as possible to ensure that the project does not siphon General Fund revenues that are needed for other programs. Potential entities include a Mello-Roos Community Facilities District, which could also be used to fund capital improvements, or a Community Services District as proposed by the project applicant. Specific entities should be chosen at the Specific Plan stage of project approval.
(l) be planned to be self-sustaining so that they can logically petition for incorporation; and	The proposed project includes a variety of proposed land uses which, if market conditions prove favorable, would help ensure a balanced tax base. In addition, some services and capital facilities are proposed to be financed and governed through a multi-purpose special district (such as a Community Services District), which would provide a basis for fiscal/financial self-sufficiency, and for creating an organizational framework for self-governance.	None necessary.
(m) provide for urban levels of police and fire protection.	The proposed project includes formation of a Community Services District to provide urban levels of police and fire protection. Refer to Section 4.3 of this DEIR regarding police and fire protection.	Refer to Section 4.3 of this DEIR.

* This policy is also included in the existing Land Use/Circulation Element of the San Joaquin County General Plan (San Joaquin County, 1976).

Table 4.2-1 - *continued*

Policy	Project's Relationship to Policy	Mitigation Measure
15. Residential development shall be protected from incompatible land uses by the use of buffers and land use regulations.	Potential land use conflicts are addressed in Section 4.1 of this DEIR. While some open space buffers are proposed for the project, land use conflicts between off-site agricultural operations and on-site residential areas could occur.	Refer to Section 4.1 of this DEIR. Additional buffers should be included for the project, especially along the site's western edge where a 1,000-foot buffer is recommended.
TRANSPORTATION		
3. Transportation needs and access shall be considered when locating land uses.	The proposed project includes a number of new arterials, collectors, and local roads to provide access to new urban land uses. However, a number of off-site roads and freeways would have deficient levels of service as identified in Section 4.14 of the DEIR. On-site roads would be widened, as proposed by the project sponsor.	Roads providing access to and within the project site would need to be widened. Transit service would need to be provided. Additional local-serving commercial uses should be provided on-site to promote accessibility via non-automobile travel.
7. On minor arterials and roadways of higher classification, the County shall maintain a level of service (LOS) no lower than D at all intersections, and the following on the throughways: (a) on State highways, LOS D; (b) within a city's sphere of influence, LOS D, or LOS C when the city plans for that level of service or better; and (c) on other roads, LOS C.	Interstate 205 (I-205) and Interstate 580 (I-580) would operate at deficient levels of service at project buildout, even with the addition of new lanes and use of Transportation Demand Management (TDM) measures. Nearby freeway interchanges would require improvements to accommodate project and cumulative traffic. Section 4.14 of the DEIR addresses LOS impacts.	Major roadway and freeway improvements would be required if the level of development were not significantly reduced at the project site. Transit service and TDM measures would be required. Other mitigation measures are addressed in Section 4.14 of the DEIR.
FLOOD HAZARDS		
2. New areas of residential development shall be zoned for development only if the area has 100-year flood protection.	Residential uses are proposed within the 100-year flood zone. Flood protection could be achieved either by raising the elevation of structures a minimum of one foot above the 100-year flood elevation or improving the levees that protect the project site to meet FEMA standards (see Section 4.7 of the DEIR).	Levees protecting the site should be inspected, evaluated, and improved, as necessary. Before the Specific Plan is approved and rezoning for residential uses occurs, the area within the 100-year flood zone must be taken out of this designation.

Policy	Project's Relationship to Policy	Mitigation Measure
AGRICULTURAL LANDS		
10. Non-agricultural land uses at the edge of agricultural areas shall incorporate adequate buffers (e.g., fences and setbacks) to prevent conflicts with adjoining agricultural operations.	Additional buffers would be needed at the western edge of the site where proposed residential uses would abut off-site agricultural operations. Residences could be impacted by the off-site aerial application of fertilizers and pesticides.	The project should incorporate a 1,000-foot wide buffer at the western edge of the site. Refer to Section 4.1 of the DEIR.
VEGETATION, FISH, AND WILDLIFE HABITAT		
3. No public action shall significantly diminish the wildlife and vegetative resources of the County; cumulatively significant impacts shall be avoided.	The proposed project would result in elimination of over 4,000 acres of on-site wildlife habitat and would affect endangered, threatened, and State species of concern, such as the Swainson's hawk and the San Joaquin kit fox. The habitat area of most concern is located between Old River and Byron Road. Section 4.13 of the DEIR addressed biotic resources in greater detail.	A large portion of the project site should be set aside as an agricultural preserve to maintain on-site wildlife habitat. A management and enhancement plan should be prepared for this agricultural preserve.
4. No net loss of riparian or wetland habitat or values shall be caused by development.	The project would result in elimination of seasonal wetlands and periodic wetland areas, such as irrigated pastures and drainage swales. The project sponsor proposes to replace any wetlands that would be lost due to development.	Rather than replacing wetlands that are lost, existing on-site wetlands should be preserved and enhanced.

TABLE 4.2-2

**PROJECT'S RELATIONSHIP TO POLICIES OF SAN JOAQUIN COUNTY
LAND USE/CIRCULATION ELEMENT OF THE 1995 GENERAL PLAN¹**

Policy	Project's Relationship to Policy	Mitigation Measure
NEW TOWN POLICIES		
2. The development of new towns shall minimize resulting adverse impacts on surrounding urban centers.	The most significant impact of the project on surrounding urban centers would be related to fiscal issues which are addressed in Section 4.9 of this DEIR.	Refer to Section 4.9 of this DEIR.
5. The design of the development in new towns should encourage neighborhood identification.	As proposed, neighborhood identification would occur as a result of school and neighborhood park locations. However, no specific neighborhood boundaries have been drawn or delineated by roads, nor have an adequate number of neighborhood commercial areas been proposed.	Additional neighborhood commercial areas should be identified. The Specific Plan for the project should include descriptions of how neighborhood identification would occur.
8. The following site development policies shall apply to new towns:	Potential erosion impacts are discussed under Impact 4.6-2.	Mitigation measure 4.6-2 should be implemented. The Specific Plan should include mitigation for construction-related erosion and sedimentation. The Specific Plan should include best management practices as mitigation for any on-site erosion or sedimentation that may occur during and after construction.
a. All development and construction activities should minimize erosion by method such as limiting any necessary grading on unstable slopes to the dry months and assuring planted slopes during the rainy season.		
b. Structures shall be set back at least 50 feet from any identified fault, as determined by a registered geologist.	No identified faults are located on the site or within 50 feet of the site.	None necessary.

¹ This Land Use Element was adopted in 1976 and amended in 1987. Those policies, which are similar to the Draft General Plan 2010, are identified in Table 4.2-1. These policies would only apply if the proposed project would require amending the 1995 Plan.

Table 4.2-2 - *continued*

Policy	Project's Relationship to Policy	Mitigation Measure
<p>c. Ridgelines and major hill tops are to remain undeveloped in order to preserve the natural contours of the site.</p> <p>9. The phasing of development in new towns shall conform to the following policies:</p> <p>a. The County shall ensure that public facilities and services required by the General Plan Amendment and any Specific Plans shall be available concurrent with need by requiring the developers to present evidence, including security if necessary, that the required facilities and services will be provided.</p> <p>b. All public facilities, including but not limited to utilities, schools, roads, parks, fire and police stations, shall be constructed, dedicated to the appropriate agency, and made operational as specified in the phasing program of a townwide Specific Plan.</p> <p>c. Each phase of development shall be compact in order to minimize the costs of public improvements.</p>	<p>No ridgelines or major hill tops are located on the project site.</p> <p>This insurance could not occur until the Specific Plan and project construction phases.</p> <p>This insurance could not occur until the Specific Plan and project construction phases.</p> <p>The phases of the project would not be entirely compact as depicted in Figure 3.8. Some dispersed development would occur to accommodate water and wastewater facilities as well as open space. Costs of public improvements are addressed in Section 4.10 of this DEIR.</p>	<p>None necessary.</p> <p>Security regarding provision of needed public facilities and services should be identified at the time of the Specific Plan and prior to construction.</p> <p>Security regarding provision of needed public facilities and services should be identified at the time of the Specific Plan and prior to construction.</p> <p>None necessary.</p>

Table 4.2-2 - *continued*

Policy	Project's Relationship to Policy	Mitigation Measure
<p>d. The phasing of the development generally should provide revenues in excess of service costs to the County, other impacted public agencies, and residents of the community.</p>	<p>Revenues and costs are addressed in Section 4.9 and 4.10 of this DEIR. Depending on market conditions, the proposed project could generate service costs that exceed annually-recurring revenues.</p>	<p>Refer to Sections 4.9 and 4.10 of this DEIR. The demand for new services should be monitored to ensure that adequate financing mechanisms are in place. At the Specific Plan stage, financing and management entities should be identified. The Specific Plan should ensure that capital cost burdens are reasonable and affordable for local property owners and that community-related services are financed by the residents and businesses of the community rather than by County taxpayers at large.</p>

- Lack of buffer areas to ensure that the project remains a distinct community and is adequately separated from agricultural operations
- Use of prime agricultural land when reasonable alternative acreage is available for the proposed project
- Creation of growth-inducing impacts and pressure on surrounding agricultural land
- Inadequate levels of service on roadways
- Removal of wildlife habitat

The following mitigation measures are summaries of specific mitigation measures described in Tables 4.2-1 and 4.2-2:

Mitigation Measures

- 4.2-1(a) *The removal of Prime Farmland is a significant unavoidable adverse impact that cannot be mitigated. The only mitigation measure that could result in compliance with the County Policy to preserve prime agricultural land would be denial of the project or approval of the project at an alternative location. Aside from this one conflict with County policies, the remaining recommended mitigation measures would reduce the impact to a level of insignificance.*
- 4.2-1(b) *If the project were approved at the proposed project site, the following mitigation measures should be required to protect on-site and adjoining agricultural lands: a 1,000-foot wide buffer at the site's western edge; notification of property owners regarding the County's Right-to-Farm Ordinance; project contributions towards an agricultural land trust; inclusion of lands designated for agricultural use within the project site boundaries; and redesignation of vacant lands from urban to agricultural use elsewhere in the County. The County currently has a private, non-profit farmland trust which can accept donations to be used for the permanent protection of farmland. A policy to support this trust is included in the Revised Draft General Plan 2010.*
- 4.2-1(c) *To create an urban center for the project, the core commercial areas of the project should be able to exceed the 45-foot height limit under special circumstances (e.g., provision of underground or structured parking within commercial buildings or inclusion of affordable housing in mixed-use areas).*
- 4.2-1(d) *Additional neighborhood commercial centers should be included. Three school/park areas at the site's western boundary should be relocated farther east to be more central to residences.*
- 4.2-1(e) *A new pedestrian plan should be developed which includes pedestrian paths following open space corridors and connecting neighborhood commercial centers and primary employment areas.*
- 4.2-1(f) *Bicycle paths should follow open space corridors and roads that are two-lane as well as four or more lanes.*

4.2 ZONING AND GENERAL PLAN POLICIES

- 4.2-1(g) *Agricultural and landscaped buffer areas should be included in the proposed project to maintain Mountain House as a distinct community and to minimize growth-inducing impacts.*
- 4.2-1(h) *Identifiable neighborhoods that would accommodate 3,000 to 5,000 residences should be included at the Specific Plan stage.*
- 4.2-1(i) *The Specific Plan for the project should include provisions for multi-family residential uses above ground-floor retail uses.*
- 4.2-1(j) *Neighborhood commercial areas should be sized to include only those commercial uses needed for its target neighborhood.*
- 4.2-1(k) *If a Community Commercial area is to be located north of Byron Road, more intensive office, residential, and retail uses should surround this area. Alternatively, only one Community Commercial district should occur. This district should be located within the project's central business district.*
- 4.2-1(l) *The Specific Plan should identify landscape buffering at the edge of the General Commercial areas.*

Impact

- 4.2-2 **The project could result in the redirection of growth away from urban and rural communities identified in the County's General Plan. The project's estimated population represents 42.6 percent of the growth projected for the entire Tracy Planning Area without the new communities of Tracy Hills and New Jerusalem (Figure 4.2-3). Such redirection of growth could have significant fiscal ramifications for existing urban and rural communities.**

The County is currently updating growth projections for the 11 planning areas within the County. The proposed project is located entirely within the Tracy Planning Area which extends from Old River on the north to the County border on the south, and from the County border on the west to the San Joaquin River on the east (Figure 4.2-3). Within this planning area, three major new communities are proposed: Mountain House, Tracy Hills, and New Jerusalem. Existing urban and rural communities within this planning area include the City of Tracy, Lammersville, Banta, Chrisman, New Jerusalem, Stoneridge, and Vernalis.

In 1990, a total of 22,600 new residential units were projected for the entire Tracy Planning Area for the period of 1990 to 2010 (San Joaquin County, 1990). All but 135 of these residential units were projected to be constructed within the boundaries of identified communities. The amount of residential development proposed for the project (16,003 units) would represent 71 percent of the total residential development projected for the Tracy Planning Area, without including the proposed new communities of Tracy Hills and New Jerusalem.

The County now projects that the Tracy Planning Area could have anywhere between 37,500 and 57,800 new residential units by 2010, accounting for the proposed new communities plus the growth projected for existing urban and rural communities (Economic and Planning Systems, 1991). The lower projections account for the fact that demand for residential development would be limited and that all the proposed supply of land would not be developed. The higher projection assumes that all the area proposed for residential development would be developed by 2010.

If the demand for development were limited to less than the total acreage proposed for development, the proposed project could attract growth away from areas within or adjacent to the City of Tracy. The fiscal implications of this scenario are addressed in Section 4.9 of this DEIR.

Mitigation Measure

- 4.2-2 *If the proposed project General Plan amendment were approved, the County should redesignate County lands within the Tracy Planning Area. Those lands, which are designated for development, should be redesignated to agricultural uses until such lands are found necessary to accommodate the projected County growth. Such redesignation would be especially necessary if the three new communities within the Tracy Planning Area were approved. Significant acreages on the west, east, and south sides of the City of Tracy are shown in the County General Plan 2010 as areas for urban uses. Those areas, which are outside the City's existing Sphere of Influence, should be the first areas to be redesignated to agricultural uses.*

A Specific Plan would be required for the project if approval of the requested General Plan amendment were granted.

Specific Plans are required for new communities. Section 9-810 of the Draft Development Title states that any Specific Plan must be consistent with the General Plan (San Joaquin County, 1991b). Therefore, the requested General Plan amendment would need to be approved prior to development and approval of the Specific Plan. Further environmental review would occur at the time of consideration of the Specific Plan. The applicant has stated that a Specific Plan would be developed for the project if the General Plan amendment were approved.

4.3 PUBLIC SERVICES

4.3.1 PARKS AND RECREATION

Setting

Parks in San Joaquin County include local, regional, and State facilities. A majority of the regional and local parks in the County have been located and designed to optimize use of the County's natural resources: waterways, riparian vegetation, oak groves, and wildlife habitat.

Local parks function as public recreation areas serving a community, a neighborhood, or a smaller area. These local parks may be provided by a city or, if an urban area is unincorporated, they may be provided by a special district or the County. Facilities at these parks may include a tot lot, one or two softball fields, or one or two tennis courts. Regional parks provide one or more of the following: family picnicking, group picnicking, meeting rooms, play equipment, ball field(s), trails, fishing and boating, swimming and camping (Smith, 1991).

Park and recreational facilities are limited in the southwest portion of the County compared to the remaining portion of the County. Residents in the southwestern portion of the County use a combination of County and State facilities, which include Larch Clover Neighborhood Park, Durham Ferry State Recreation Area, Mossdale Landing Park and Dos Reis Park (Figure 4.3-1). Park and recreational facilities are also available in the City of Tracy.

Regional parks within San Joaquin County are often overcrowded in the summer (San Joaquin County, 1990b). This overcrowding is due to several factors including: 1) a lack of picnic shelters, ball diamonds, soccer fields, trails for hiking, cycling and equestrian use; 2) difficulty in finding a swimming beach or boat tie up in the Delta; 3) lack of fishing access sites and safe campgrounds; and 4) a lack of handicap facilities (e.g., lavatories, parking and fishing piers).

Recreational surveys in San Joaquin County suggest the need for the following facilities throughout the County (Smith, 1991):

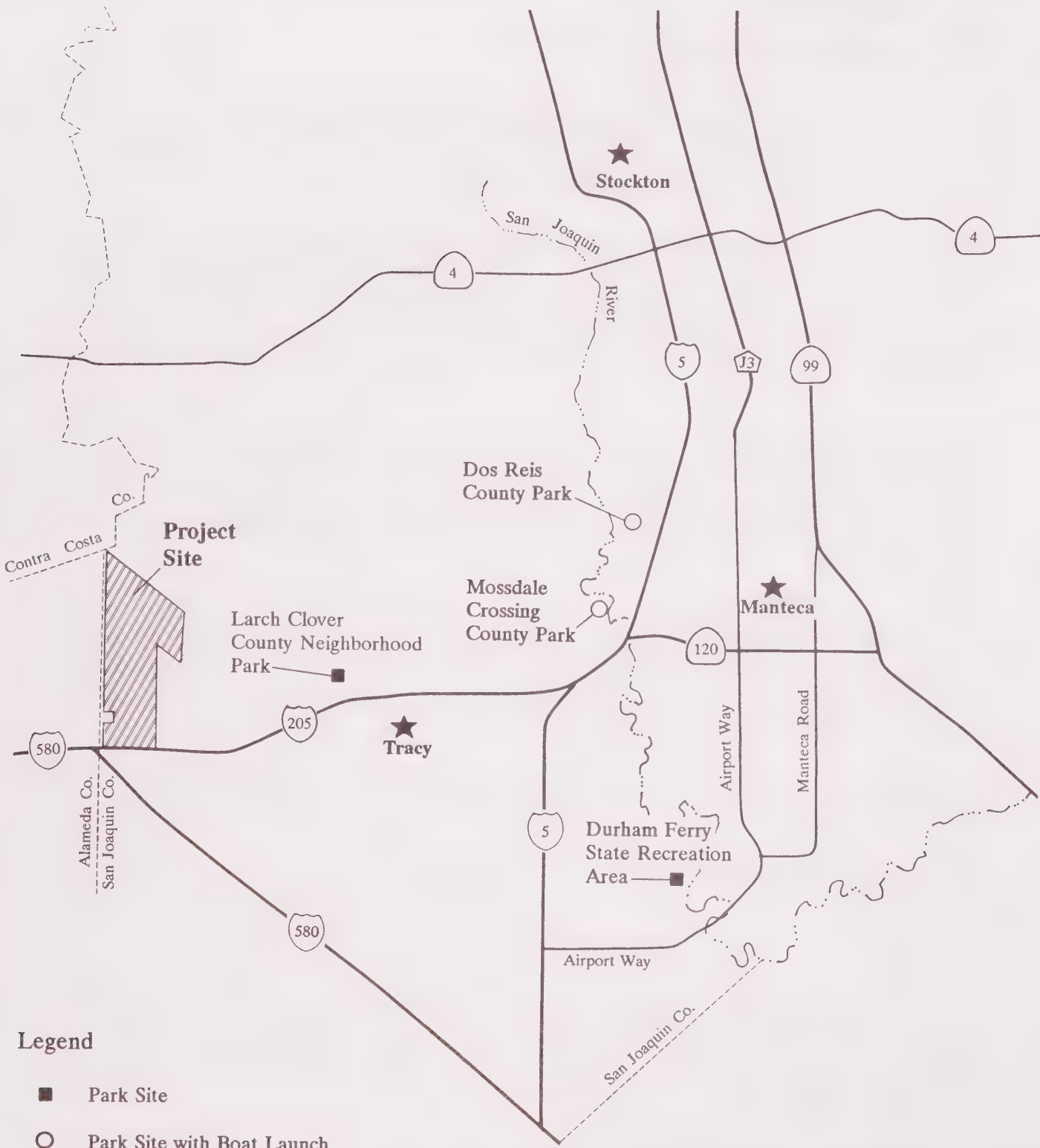
- Softball and little league fields
- Soccer fields
- Camping
- Picnicking
- Hiking trails
- Golf courses
- Fishing
- Boating

The National Recreation and Park Association (NRPA) recommends 15 to 20 acres of regional parklands per 1,000 persons. In 1980, approximately 11 acres of regional parkland per 1,000 persons were available in San Joaquin County. Current standards established by the County are ten acres per 1,000 people (San Joaquin County, 1990b).

The closest County park facility to the site is the Larch Clover County Park, located approximately five miles east of the site (Figure 4.3-1). This facility is a 4.2-acre park with a community center, a tot lot, and two softball diamonds. Two other County facilities within 20 miles of the project site are the Mossdale Landing

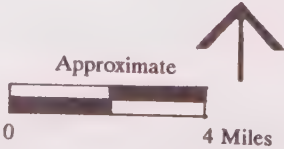
LOCATIONS OF RECREATION RESOURCES

Figure 4.3-1



Legend

- Park Site
- Park Site with Boat Launch



BASELINE

Park and Dos Reis Park (Figure 4.3-1). Both offer boat launching facilities, day use picnicking, and camping. Both boating facilities have one boat ramp which can launch two boats at a time. The parks also have boarding floats with approximately four docking spots. However, no permanent docking facilities are provided. These facilities are heavily used in the summer during peak periods (Smith, 1991).

The regional facility closest to the site is the Durham Ferry State Recreation Area. This facility, located approximately 15 miles southeast from the site, includes 207 acres of a natural area along the San Joaquin River (Figure 4.3-1). Recreational facilities include camping, day use and group picnicking, group camping, and equestrian and biking trails.

In Alameda County, the closest recreation facility is the Bethany Reservoir, a State Recreation Area located less than three miles east of the project site (Figure 3.2). Facilities at Bethany Reservoir include picnic tables and barbecue pits, hiking trails, fishing access points, and boat launching ramps. The reservoir is a closed system, providing no access to Delta waterways. Activities include: fishing of catfish, striped bass, sturgeon, perch, and crappie; limited boating; swimming; and, wind surfing. Boat speed is limited to 15 miles per hour which prohibits waterskiing and jet skiing. Bethany Reservoir is used more frequently on the weekends with an average of 60 to 65 cars per day year round. Use is limited to the daytime. During the summer, the busiest time of the year, the facility is staffed five days a week while the rest of the time, staffing is weather dependent. A ranger is present on the weekends in warmer weather (Todd, 1991).

The California Aqueduct Bikeway begins at the Bethany Reservoir and follows the California Aqueduct to Bakersfield, using the aqueduct's access road. Improvements proposed for Bethany Reservoir include providing a launching dock and improving and expanding the beach area for wind surfers. Budget cuts have placed these improvements on hold and it is unknown when they will be completed (Phillips, 1991).

Impacts and Mitigation Measures

The addition of significant numbers of residents without adequate provision of recreational amenities would be considered a significant impact. For the purpose of this DEIR, a significant impact would be one that would over-burden the capacity of regional parks and local public and private marina facilities. The impacts on parks and recreation facilities from the proposed project have been grouped according to the proposed four development phases (Table 4.3-1).

Phase I

The projected population for Phase I is 8,185 people. As stated in the Draft San Joaquin County General Plan, community and neighborhood parks should provide a minimum of three acres per 1,000 people. Thus, for a population of 8,185 people, 24.5 acres of such parks should be required. With 57 acres of neighborhood and community parks proposed for Phase I, more than adequate acreage would be provided for this phase.

Phase I provides adequate acreage for neighborhood and community parks. Tracy community parks with recreational facilities, such as softball diamonds, would be impacted in the beginning of the first phase

4.3 PUBLIC SERVICES

TABLE 4.3-1

PROPOSED RECREATIONAL FACILITIES

Types of Park/Open Space/Recreational Facilities	Phase I (acres)	Phase II (acres)	Phase III (acres)	Phase IV (acres)	Total Acreage	Required Acreage at Buildout by County Standards
Neighborhood and community parks	57	46	55	33	191	131
Regional parks	0	70	0	0	70	436
Golf course	102	175	75	0	352	*
Marina	0	53	7	0	60	*
Resource conservation	40	0	0	0	40	*

Note: * = No County standards

because these types of recreational facilities are usually constructed later in the development process (Smith, 1991). This impact would be a less-than-significant impact. To prevent an impact on the City of Tracy's community parks, the applicant should develop community parks with complete recreational facilities early in Phase I.

The applicant proposes to construct 102 acres of golf course during Phase I. The golf course would be public, thereby lessening the severity of the impacts on local golf courses in southwestern San Joaquin County. Because the golf courses in Stockton and Manteca are currently heavily used on weekends, the construction of a public course at the site would most likely attract golfers from other areas, thereby making the facilities more available to the public.

Impact

4.3.1-1 Regional park facilities in southwestern San Joaquin County would not be adequate to serve residents in the first phase of the project.

Phase I does not provide for the construction of a regional park. The Draft San Joaquin County General Plan calls for a countywide increase in regional parklands of 637 acres in 1990, and 3,160 acres in 2010, according to estimates of the 1990 and 2010 populations (San Joaquin County, 1990b). According to San Joaquin County standards (ten acres of regional parkland per 1,000 people), an addition of 8,185 people would require the creation of 82 acres of regional parks. **If the proposed 102-acre on-site golf course were donated to the County and unrestricted access were ensured, this facility in a regional park system could help to offset deficiencies.**

(CSA), should be established to fund operations and development costs associated with an increased demand on the regional parks in southwestern San Joaquin County. The method of funding for acquisition, development, and on-going maintenance should be incorporated into the text of the Specific Plan. In addition, the proposed golf course should have unrestricted access and be donated to the County to offset some of the regional park facility needs.

Impact

4.3.1-2 Inadequate phasing of water recreation facilities would increase the demand for existing County facilities in the area.

Phase I does not include marina facilities. The proposed project would likely attract people who wish to take advantage of this site's close proximity to Delta waterways. Without the provision of water access, residents would need to seek other marinas in the area. The two County parks with limited boating facilities are Mossdale and Dos Reis. Both of these parks are heavily used in summer or on good fishing or boating days the rest of the year (Smith, 1991). Additional usage would exert substantial pressure on already impacted recreation areas. Private boating facilities are located in close proximity to the site (Figure 4.1-1), and are heavily used in the summertime. At Del's Boat Harbor, located northwest of the project site, 95 percent of the customers using the boat ramps and docking facilities are from the Bay Area (Hansen, 1991).

Mitigation Measure

4.3.1-2 The applicant should provide, in Phase I, boating facilities to include a boat ramp, boat storage, and docking facilities.

Phase II

The combined Phase I and Phase II neighborhood and community parks would exceed the San Joaquin County standards. The additional population of 12,345 residents expected in Phase II would be adequately served by a total of 103 acres of neighborhood and community parks. With an estimated total population of 20,530 persons by the end of Phase II, a total of 62 acres of neighborhood and community parks would be required according to County standards.

The creation of 53 acres of water recreation facilities would be adequate for a community of 20,530 residents. However, phasing of this facility should be completed earlier to avoid impacts to nearby park facilities with launching capabilities (refer to Impact 4.3.1-2) (Smith, 1991).

4.3 PUBLIC SERVICES

Impact

4.3.1-3 **Development of a 70-acre regional park in Phase II would be inadequate to meet regional park needs.**

A regional park of 70 acres would be added in Phase II of site development. With a total population of 20,530 persons anticipated by the end of Phase II, the development should provide 205 acres of regional parkland according to County standards. **The Phase II, 175-acre golf course could have unrestricted access and offset some of the demand for regional parkland.**

4.3 PUBLIC SERVICES

Mitigation Measure

4.3.1-3 *A minimum of 205 acres of regional parkland should be provided either on-site by the end of Phase II, or in-lieu development fees should be assessed to supplement the shortage of parkland as defined by County standards.* **an in-lieu fee program should be established by the County Parks and Recreation Department to fund operations and development costs associated with regional parks. The proposed on-site golf course should have unrestricted access to offset some of the demand for regional parkland if it will be used to offset some of the regional park facility needs. Provision of adequate regional parkland should be identified in the Specific Plan when a final phasing plan is available.**

Phases III and IV

By the end of Phases III and IV, neighborhood and community parks, golf courses, and marina facilities would be adequate to serve the project. A total of 191 acres of neighborhood and community parks would be provided, which would be 60 acres more than required (i.e., 131 acres) to meet County standards. No standards have been established for golf courses and marinas.

Impact

4.3.1-4 **By the end of Phases III and IV, total acreage set aside for a regional park would be deficient in terms of County standards.**

The project proposes a total of 70 acres to be set aside as a regional park. This acreage would be inadequate to accommodate the population through Phase II according to County standards. Without providing additional acreage for a regional park in Phases III and IV, the project would fail to meet County standards. For the total projected population, an additional 366 acres of regional parkland would be required.

If the acreage proposed as Open Space/Resource Conservation (i.e., 40 acres) were to be counted as regional parkland, then the deficit of regional parkland would be 326 acres. However, the proposed 40 acres of Open Space/Resource Conservation would be a wetland which may or may not serve as regional parkland. At the present time, plans do not indicate that this acreage would be designated for regional parkland. If the excess acreage of neighborhood and community parks were also included, the deficit of regional parkland would be reduced to 266 acres. However, regional parks provide a specific type of recreation which is different than that provided by neighborhood or community parks, golf courses, or marinas.

Mitigation Measure

4.3.1-4(a) *An additional 326 to 366 acres of regional parkland should be provided on-site by the end of Phase IV, or in-lieu development fees should be assessed to supplement the shortage of parkland as defined by County standards. Provision of adequate regional parkland should be identified in the Specific Plan. The exact amount of required acreage would depend on the designation of the proposed on-site wetland. The acreage should also reflect the phasing plan included in*

~~the Specific Plan and should meet County standards.~~ An in-lieu fee program should be established by the County Parks and Recreation Department to fund operations and development costs associated with regional parks.

4.3.1-4(b) The Specific Plan must provide an implementation plan for the funding of acquisition, on-going maintenance, and development costs for all recreation and park facilities.

Development of the proposed project would place a greater demand on the use of Bethany Reservoir. As day uses increase, the Department of Parks and Recreation may have to restrict its use. An increased

number of boaters on the small reservoir could result in crowded conditions, thereby creating safety hazards (Phillips, 1991). This impact is a less-than-significant impact and would not require mitigation.

4.3.2 SCHOOLS

Setting

The proposed project is located within the Lammersville Elementary School District (LESD) and the Tracy Joint Union High School District (TJUHSD) (Figure 4.3-2). ~~The following existing schools would serve the project (until on-site schools were constructed):~~ Lammersville Elementary School, **located** at 16555 W. Von Sosten Road ~~for kindergarten through eighth grade (located three to five miles from the proposed site), and Tracy High School at 315 E. 11th Street in Tracy, 6 to 7 miles southeast of the proposed site would serve the project until on-site elementary schools were constructed.~~ A new high school (Merrill F. West High School), currently under construction, is located at 1775 West Lowell Avenue in Tracy, ~~5 to 6~~ **12 to 15** miles from the site. This high school is proposed to accommodate some students in the initial phase of the proposed project **with residential occupancy assumed after August 1993. If occupancy occurs prior to August 1993, when Merrill F. West High School is due to open, students would attend Tracy High School on an interim basis.**

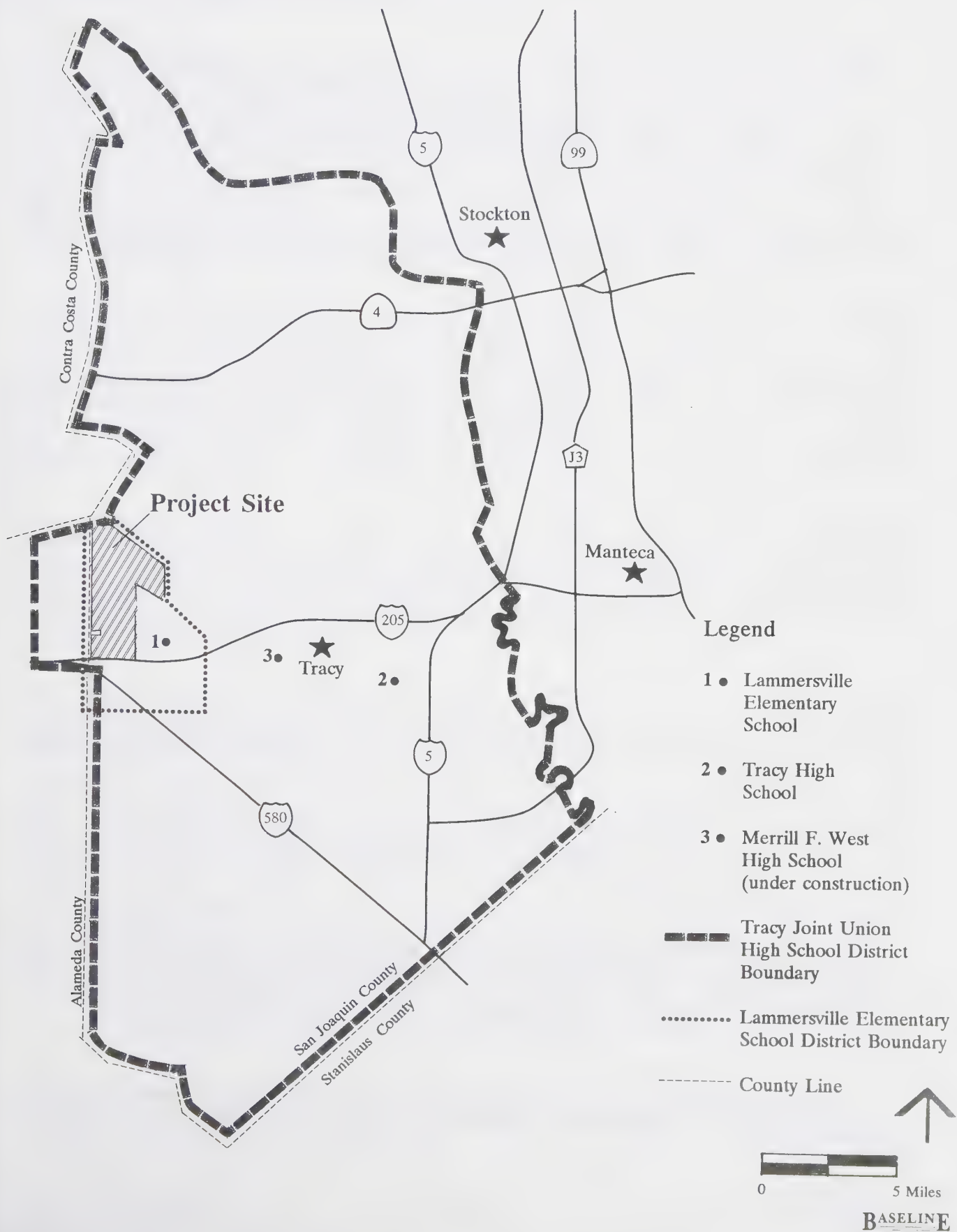
TJUHSD is currently experiencing overcrowded conditions. The capacity of Tracy High School is 1,800 students, with an additional 300 students housed in portable classrooms located on the campus. The new high school will alleviate existing overcrowded conditions at Tracy High School (Bernakis, 1991). The capacity of Lammersville Elementary School is 750 students. The school is currently within capacity and can accommodate additional students (Olds, 1991).

School bus service is available at both the elementary school and the high school. However, bus service at the Lammersville Elementary School is limited to one bus that must make two runs in the afternoon (Olds, 1991). Tracy High School offers bus service only to students who live more than ~~a two~~ **two** miles from the campus ~~unless and within the two-mile radius where the School Board has deemed~~ conditions are unsafe for walking (Bernakis, 1991).

The TJUHSD has successfully funded new school facility needs in the recent past through the establishment of Mello-Roos Community Services Districts (CSD). It is the School District's intention to follow the same basic methods for the proposed project. In establishing the existing CSDs, the School District has depended on a development data model (associating schedule of buildout and housing counts) to determine the need for adequate facilities to serve pupils from the new development. The model includes all capital outlay needs, including: school buildings; service buildings; food service; and vehicles for transportation, maintenance, and food service. The model anticipates the receipt of the normal school development fee by the School District, as well as the revenue generated from the CSD (Bernakis, 1991).

Impacts and Mitigation Measures

For the purposes of this DEIR, a significant impact is one which would exceed the capacity of existing local schools during the initial phase of the project and result in a shortage of on-site schools after buildout. Based on a total of 16,003 proposed dwelling units, the project is anticipated to generate 10,818 elementary/middle



school students and 4,801 high school students at full buildout (Table 4.3-2).¹ The applicant is proposing two high schools which would be adequate to serve the projected student population. Fourteen elementary and middle school sites have been proposed. Each K-8 school site would have a student capacity of 750 students (Olds, 1991). In a recent study completed for the Lammersville Elementary School District, a total of 12 schools would be required, providing grades K-6 are in session on a year-round schedule (Winters, 1991); **the cost of these improvements is estimated at about \$112 million.** To secure State funding for the development of elementary schools, a minimum 20 percent of the K-6 schools must operate year-round. If the classes do not operate year-round, then 14 elementary schools would be required (Winters, 1991).

TABLE 4.3-2
SCHOOL-AGE CHILDREN GENERATED BY THE PROJECT

	Phase I	Phase II	Phase III	Phase IV	Total
Number of residents	8,185	12,345	12,411	10,695	43,636
Number of housing units	2,925	4,676	4,578	3,824	16,003
Number of elementary school students	1,977	3,161	3,095	2,585	10,818
Number of high school students	878	1,403	1,373	1,147	4,801
Total Students	2,855	4,564	4,468	3,732	15,619

Note: Generation rates for all housing units: 0.676 students/unit for K-8, 0.30 for grades 9-12 (Olds, 1991, Bernakis, 1991).

Impact

4.3.2-1 **Bussing of students in Phase I would place a greater demand on an existing limited school bus systems.**

Providing that growth rates remain the same within the LESD, the Lammersville Elementary School would be able to accommodate up to 100 students from the project during the early part of Phase I until such time the first on-site elementary/middle school is available for occupancy later in Phase I (Olds, 1991). However, because the school has very limited bus service, it would be necessary to purchase an additional bus to provide service to/from the site. **The number of students to be bussed to Tracy High School would also impact the high school district's bus service. Additional busses would need to be acquired to bus these students. The TJUHSD estimates that 35 vehicles of all types would be needed at a cost of about \$1.5 million to serve the project after on-site high schools are constructed.**

¹A recent study completed for LESD used an overall student generation rate of 0.676 per dwelling unit for grades K-8 and the Tracy Joint Union School District uses a single student generation rate of 0.30 for high school students for all housing types.

4.3 PUBLIC SERVICES

Mitigation Measure

- 4.3.2-1 *Through the establishment of a Mello-Roos District,² the applicant should provide necessary funds for the purchase of a school busses for both the elementary and high school districts. This measure or other appropriate measures should be identified in the Specific Plan.*

Impact

- 4.3.2-2 **The infusion of students from the project would significantly impact the new high school (currently under construction) until a new high school is constructed at the project site.**

Attendance and school capacity boundaries have ~~not~~ been established for the Merrill F. West High School in Tracy (now under construction). Students from the project would be assigned to ~~an off site high school such as the Merrill F. West High School~~ **this high school** until such time as the on-site high school is constructed. Development of Phase I of the project would generate 878 students. Initially, Merrill F. West High School can accommodate additional students, but impact will begin immediately and portable classrooms will be needed (Bernakis, 1991). **Development plans indicate** the first high school for the project would not be constructed until Phase II.

In response to the applicant's phasing plan and the concern that high school students from the project site would impact existing facilities, the TJUHSD has proposed a facilities planning schedule (Table 4.3-3). This schedule would allow the school district to provide 15 to 17 portable buildings (30 to 34 classrooms) until school facilities were constructed within the new community in the early phase and within the limitations of available financing at the time (Bernakis, 1991).

The proposed land use plan (Figure 3.7) indicates one high school site immediately north of a commercial area and another high school diagonally across Grant Line Road from a neighborhood commercial area. In addition, an elementary school is proposed adjacent to a high school, which results in a concentration of youth of a broad range of ages. Such locations near commercial areas may create an attractive nuisance for high school students. During development of the Specific Plan, the proposed high schools should be relocated farther from commercial areas and Grant Line Road. The high school should be separated from the elementary school.

Mitigation Measure

- 4.3.2-2 *The recommended schedule for high school funding and construction provided by the high school district (Table 4.3-3) should be ~~incorporated into~~ **agreed upon by the high school district and the applicant prior to approval of the Specific Plan. The schedule should reflect construction of the high school to begin in Phase I rather than Phase II as proposed.***

²Creation of a special district that can issue tax-exempt bonds for planning, design, acquisition, construction, and operation of public facilities to benefit district residents.

4.3.3 FIRE PROTECTION SERVICE

Setting

The project site is located within the Tracy Rural County Fire Protection District (TRCFPD). As of March 1991, the District operated four fire-fighting stations (Figure 4.3-3). Emergency medical services are provided in the District by one ambulance housed at Tracy Hospital on Tracy Boulevard and one at Fire Station 3.

Station 3 would be the primary response station to the project and Stations 1 and 4 would be the secondary response stations. Average response time to the project site is four minutes. A fifth fire station has been approved to be built in the vicinity of Hansen Road between the California Aqueduct and the Delta-Mendota Canal. Station 5 would be approximately two miles south of the site and will house an engine and truck company. Response time from Station 5 to the project site would be two to four minutes (LeBlanc, 1991).

TABLE 4.3-3

**RECOMMENDED PHASING FOR HIGH SCHOOL CONSTRUCTION
AND TRANSPORTATION FACILITIES**

Schedule/Phase	Activity
Present	Planning of: campus populations; campus facilities; overall facility need specifications; locations
General Plan Amendment/Specific Plan	Creation of CSD for school facility funding and transportation facilities
Phase I	a) Provision of temporary housing on existing site(s) (up to 17 portable buildings needed for Phase I student population) b) Construction of transport center at High School I (HS-I) c) Complete initial phase of HS-I
Phase II	a) Complete final phase of HS-I b) Plan for High School II (HS-II)
Phase III	a) Complete warehouse, shop facilities at HS-I b) Complete initial phase of HS-II
Phase IV	Complete final phase of HS-II

Source: Bernakis, 1991.

Forty-four fire personnel currently serve the District of approximately 22,000 residents. The firefighting force consists of 24 uniform personnel, two non-uniform personnel, and 18 volunteers. All four stations have two persons on duty per shift. Volunteer personnel respond to all calls in the District. The number of firefighters responding to emergency calls is determined by how many volunteers are available at the time. The majority of calls received by the District are for emergency medical services as a result of vehicle injuries or vehicle fires. The District is part of the statewide mutual aid system and can obtain assistance from all of California's fire resources. Neighboring fire departments would be used first in the event of a major fire or emergency (LeBlanc, 1991).

Impacts and Mitigation Measures

For the purposes of this DEIR, a potential for inadequate provision of local fire services as a result of the proposed project would constitute a significant impact.

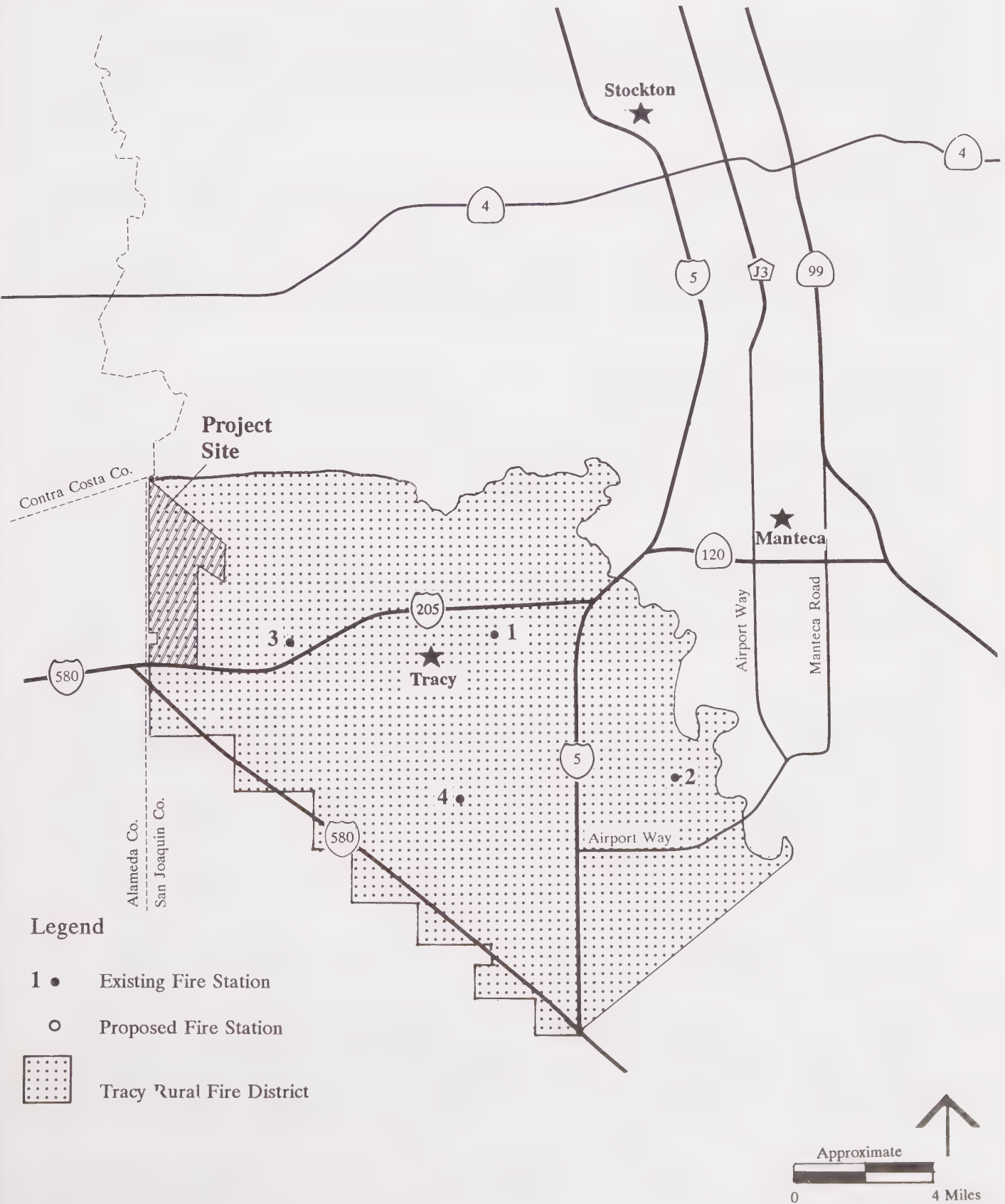
4.3 PUBLIC SERVICES

Impact

- 4.3.3-1 **The proposed project would temporarily increase the demand for local fire protection service until on-site services are provided. Plans to provide this service have not been finalized by the applicant.**

TRACY RURAL FIRE DISTRICT BOUNDARY AND FIRE STATION SITES

Figure 4.3-3



Project plans call for providing on-site fire protection services, including a fully-staffed and equipped fire station. However, the project would increase the demand on local fire protection services until the project-sponsored services could be provided. The institutional arrangement for providing this service has not been finalized.

Mitigation Measure

4.3.3-1(a) *Institutional arrangements for providing fire protection service should be finalized in the Specific Plan.*

4.3.3-1(b) **The Specific Plan should include policies relative to fire flow requirements, funding assistance for the construction of fire stations, and ownership of the fire stations.**

4.3.4 POLICE PROTECTION SERVICE

Setting

Law enforcement services to the project site are provided by the San Joaquin County Sheriff's Department which operates its patrol division and jail facilities out of French Camp, south of Stockton. The Department has no substations but operates its patrolling programs on a district basis.

The Sheriff's Department provides services to the unincorporated portions of the 1,440 square mile County area. In addition to routine law enforcement duties, responsibilities of the Sheriff's Department include: operating the jail; maintaining security in the courts; serving civil papers; providing crime prevention instruction to schools and community groups; and conducting coroner's investigations. The California Highway Patrol provides traffic law enforcement on County roadways, freeways, and California highways.

The site is located within Patrol District 8 which encompasses a large area in the extreme southwest corner of San Joaquin County. The District borders are the Alameda County line on the west, the Stanislaus County line on the south, the San Joaquin County border/Old River on the north, and San Joaquin River on the east. Patrol District 8 frequently has no personnel assigned in the evenings. District 7 overlaps patrol service if no officers are available in District 8. A recent study indicated that the following average daily patrol units are assigned to District 8 (Burnett, 1991):

Day Shift (7 AM to 4 PM):	1.3 deputies
Swing Shift (4 PM to 2 AM):	0.50 deputy
Graveyard Shift (9 PM to 7 AM):	0.64 deputy

The Sheriff's Department is funded only to provide rural police protection throughout the County's unincorporated area. Currently, the ratio of patrol personnel to residents on a countywide basis is one officer per 1,210 residents (Burnett, 1991). This ratio is less in Service District 8. The Sheriff's Department is seeking to achieve a ratio of one officer per 1,000 residents to continue providing a rural level of service (Burnett, 1991).

The Sheriff's Department's response times are generally longer than those of city police departments. The longer response times are related to the size of the patrol area; density of the population served; the level of traffic congestion; accessibility; and, the number of incidents occurring at the same time. The size of the patrol area and the density of population to be served determine the size and frequency of the patrol beat (Burnett, 1991).

Old River is patrolled by the Sheriff's Department's Boating Safety Division in the site vicinity. The patrol boats are housed in north Stockton, approximately two hours from the project site, by boat. Because the Boating Safety Division has limited manpower and equipment to cover the labyrinth of Delta waterways during the busy summer months, a patrol boat may drive past the project site once per day on weekends. On weekdays, during the summer and during the off season, boat patrols respond on an on-call basis (Burnett, 1991).

The Contra Costa Sheriff's Department Marine Services Bureau patrols Delta waters in Contra Costa County in the vicinity of the project site. The Bureau is responsible for patrolling a geographic area from San Francisco Bay east to San Joaquin County, including portions of Suisun Bay and the Carquinez Straits. Currently, the Sheriff's Department maintains four full-time marine patrol officers and 20 reserve officers. The large service area and limited manpower restricts the extent of patrolling during each shift (Carpenter, 1992).

Impacts and Mitigation Measures

For the purposes of this DEIR, an increase in demand for police service as a result of the proposed project would constitute a significant impact.

Impact

4.3.4-1 The proposed project would temporarily increase the demand for police services from the County Sheriff's Department.

The applicant proposed to provide on-site police services. The institutional arrangements for implementing on-site services has not been confirmed. Various arrangements, such as contracting police services through the Sheriff's Department or establishing a public safety system, are being considered. Until on-site police services are provided, the demand for service from the County Sheriff's Department would increase.

Mitigation Measure

4.3.4-1 *Institutional arrangements for providing police services should be finalized in the Specific Plan.*

Impact

- 4.3.4-2 The number of marine patrols both in San Joaquin and Contra Costa counties would be insufficient at project buildout to provide effective law enforcement along Old River and in the Delta within the project vicinity.**

The proposed project would increase demand on the Sheriff's Department's Boating Safety Division. Patrol services are inadequate to cover a large geographic area. Current response times during the peak season are two hours to the Old River area of the site. When marina facilities are constructed and in use at the project site, the existing level of patrolling Old River would be inadequate (Burnett, 1991). If the project were to incorporate and establish its own harbor patrol to serve the marina, boating traffic would continue to impact the Sheriff's Boating Safety Division due to increased use of the waterways in the area.

The increase in boat traffic as a result of the proposed marina would also create a demand for service on the Contra Costa County Sheriff's Department Marine Services Bureau. The proximity of the project site to Contra Costa County waters would attract boaters from the proposed marina.

Mitigation Measures

- 4.3.4-2(a) *The applicant's public safety plan should include provisions to patrol the Mountain House marina and the immediate vicinity of the marina.*
- 4.3.4-2(b) *Fees, based on the number of berths, should be assessed to help offset costs for maintaining the Sheriff's Department Marine Patrol Division **In both San Joaquin and Contra Costa counties.***
- 4.3.4-2(c) *The Specific Plan should incorporate crime prevention policies such as providing security fencing, good lighting, visible berth numbers, and locked gates on boat docks for the marina and related facilities.*

4.3.5 SOLID AND HAZARDOUS WASTE

Setting

San Joaquin County is divided into six refuse service areas which represent geographic guides for franchised collectors. Commercial and industrial wastes are collected by private collection companies through the competitive bid process. The proposed site is within the South County Refuse Service Area which is under contract to Tracy Delta Disposal Company. Solid waste is brought to a transfer station and trucked to the Foothill Landfill, approximately 50 miles from the site in the extreme eastern portion of San Joaquin County (Karam, 1991). Foothill Landfill is a Class III landfill permitted by the Regional Water Quality Control Board to receive nonhazardous waste. The landfill site contains 800 acres of which only an 85-acre portion is presently used. The life of the landfill is expected to extend past 2050. Although this estimate depends on such factors as the extent of development within the county and other counties utilizing this facility (Price, 1991).

Hazardous waste is not accepted at any San Joaquin County waste disposal facility. If hazardous materials are delivered to the landfill, the collection service must return them and make arrangements to have the materials delivered to an appropriate disposal site. A licensed hauler is hired by the County to properly dispose of hazardous waste if the wastes are discovered outside County landfill facilities (Karam, 1991). The Draft San Joaquin County Comprehensive Plan (San Joaquin County, 1990) recommends development of treatment, storage and disposal facilities in the County. San Joaquin County prepared a County Hazardous Waste Management Plan (CHWMP) which addresses emergency response programs, contaminated sites, and educational as well as administrative programs related to hazardous wastes (San Joaquin County, 1990). The CHWMP also addresses existing and projected hazardous waste generation from the residential, commercial and industrial sectors. Household hazardous wastes include household maintenance materials. Such items consist of oil-based paints, stains, varnish, paint removers, drain openers, oven cleaners, rug and toilet bowl cleaners, ammonia and wood and metal cleaners and polishes. The CHWMP projected a total hazardous waste stream of 18,748 tons per year by the year 2000, of which 38 percent of this total is attributable to household waste. As of April 1991, the County CHWMP had not been approved by the California Department of Health Services because the hazardous waste sites had not been sited in the plan (Price, 1991).

4.3 PUBLIC SERVICES

Title 14 of the California Administrative Code requires a statewide waste reduction goal of 25 percent by 1995 and 50 percent by the year 2000. These goals will not be achieved without recycling a substantial amount of materials going into the waste stream. The Tracy Delta Disposal Company provides three types of recycling services to southwestern San Joaquin County: curbside pick-up; buy-back centers; and drop-off centers. The disposal company's curbside program focuses on pick-up of glass, aluminum, paper products, and newspaper from residential as well as commercial sites within Tracy City limits. The drop-off centers' revenues are distributed to schools and churches. The second type of recycling service provided by Tracy Delta Disposal Company is buy-back centers, predominantly associated with aluminum cans and glass beverage bottles. Numerous buy-back centers are located in Tracy, with the largest one located at 205 East 3rd Street. This center also serves as a mini-transfer station for recyclables. The 3rd Street center accepts all grades of paper, cardboard, aluminum, plastic and tin as well as old appliances (Repetto, 1991). Tracy Delta Disposal Company accepts waste oil at their 6th Street yard. The two closest drop-off centers to the project site are located at Lammersville School and Mountain House School.

Tracy Delta Disposal Company is ~~awaiting a permit to construct~~ **currently negotiating with the City of Tracy to locate** a transfer station ~~within the Tracy city limits, to be located at 3880 Holly Drive approximately four miles from the project site. The application is currently being reviewed by the City of Tracy Planning Department and Planning Commission.~~ **on City-owned property adjacent to the Tracy airport. The site consists of 14 acres and is located in an industrial zone, approximately 11 miles from the project site.** The station would serve as a Materials Recovery Facility (MRF) that incorporates a "picking station" whereby waste management personnel can remove additional recyclables from the waste stream using a conveyor belt. The MRF would assist Tracy Delta Disposal Company in meeting higher recycling quotas. This facility is expected to be completed by 1992 (Repetto, 1991).

Impacts and Mitigation Measures

For the purpose of this DEIR, significant impacts would occur by the increased generation of solid waste and an associated reduced landfill capacity.

Impact

- 4.3.5-1 Solid waste projected for project buildout could be 67,850 tons per year without implementing a recycling program. Solid waste generated by the project would contribute to the reduction in landfill capacity.**

The applicant has projected a total waste generation per year of 67,850 tons, based on a waste generation rate of 8.0 pounds/person/day. The County Solid Waste Division uses a waste generation rate of 8.52 pounds/person/day. Based on this revised rate the projected tons per year at full buildout would be 4,141 tons more than the applicant has estimated. Assuming a 25 percent and 50 percent recycling goal, the project would generate 50,887 and 33,925 tons of solid waste per year, respectively (Table 4.3-4).

Based on a generation rate of 7.41 pounds per household per year (EMCON, 1988), household hazardous waste projected for the project buildout could be 118,582 pounds per year. The county does not currently have a facility to accept large quantities of these disposal wastes. Presently, household hazardous wastes are disposed at the County landfill.

TABLE 4.3-4
SOLID WASTE GENERATION

	Pounds/ Person/ Day	Tonnage/Year	Cumulative Tonnage/Year			
		Phase I 1995 (8,185 pop.)	Phase II 2000 (20,528 pop.)	Phase III 2005 (32,940 pop.)	Phase IV 2010 (43,636 pop.)	
Historical rate	8.52	12,454	28,727	46,097	61,095	
25 percent reduction	6.39	9,340	21,545	34,573	45,799	
50 percent reduction	4.26	6,227	14,363	23,048	30,532	

Notes: pop = population
lb = 0.45 kg 1,000 kg = 1 ton

Source: Mills Associates, April 1991.

Mitigation Measures

- 4.3.5-1 *The Specific Plan should incorporate policies to reduce the waste stream generated by the Mountain House project. Such programs ~~may~~ **should** include establishing a curbside recycling program; a commercial recycling program; provision for on-site recycling centers, transfer stations, and composting; and a public information program. **Policies should include the County's Waste Plan Format for development projects.***

The proposed project would require additional solid waste equipment and additional personnel to service the site. This impact would be a less-than-significant impact. To provide service to the proposed project, five new residential and two commercial trucks would be required by project buildout. The trucks would require two waste management personnel for the residential trucks and one person for the commercial trucks. Two recycling trucks would be required for the curbside programs, as well as additional manpower to operate the trucks (Repetto, 1991). Collection rates could be established to offset increased costs associated with adding equipment and personnel.

4.3.6 LIBRARIES

Setting

The proposed project is located within the service area of the Stockton-San Joaquin County library system. The County maintains nine branch libraries and one book mobile. The closest branch library is in Tracy on 20 East Eaton Avenue. This branch is open six days a week and Monday and Thursday evenings. The building comprises 16,911 square feet and can serve a population of 33,800. The Tracy Library is within one block of several schools (Sabsay, 1987).

Results of the 1990 census indicate that the current population of the Tracy area is 33,558 residents (City of Tracy, 1991); therefore, any significant growth, such as the proposed project, would trigger the need for new

4.3 PUBLIC SERVICES

library facilities. Growth in north or south Tracy area would trigger development of a new facility (Freggiarro, 1991). A library study prepared for the County recommended that a second branch library should be constructed in the Tracy area (San Joaquin County, 1990b).

Impacts and Mitigation Measures

For the purposes of this DEIR, a significant impact would occur if library capacity were exceeded as a result of the proposed project.

Impact

4.3.6-1 The proposed project would increase demand for library services.

The services of the Tracy Library would be significantly impacted by the additional population growth created by the project (Table 4.3-5) (Sabsay, 1987). The Stockton-San Joaquin County Library System has foreseen the need for building a new library in the Tracy area within the next five to ten years. The County favors a permanent structure rather than a temporary branch (Freggiarro, 1991).

A full-service library must be able to meet the needs of a variety of uses; contain at least 30,000 volumes; have available clinical and professional staff during library hours; provide a children's service specialist after school hours; provide microfilm equipment, audio-visual material, computer files, etc.; and, make available programming amenities and a multipurpose room. This type of facility would require approximately 10,000 square feet of space and could serve a community of 20,000 (Sabsay, 1987).

Mitigation Measure

4.3.6-1 *Planning for and constructing an on-site library with a minimum of 10,000 square feet should begin in Phase II. By full project buildout, an additional 12,000 square-foot library should be constructed at the project site.*

TABLE 4.3-5

**LIBRARY SPACE DEMAND
BY THE PROJECT**

Phase	Projected Population	Minimum Square Footage
I	8,185	4,000
II	20,530	10,000
III	32,941	16,000
IV	43,636	22,000

Note: Assumes 0.5 square feet of library space per person.

Source: Sabsay, 1987.

4.4 PUBLIC UTILITIES

4.4.1 WATER

Setting

Service Area

The project site is located primarily within the jurisdiction of the Byron-Bethany Irrigation District (BBID). Of the site's total 4,667 acres, approximately 2,900 acres are within the jurisdiction of the BBID (Figure 4.4-1) (Trimark Communities, 1991a). Approximately 200 acres of the project site are within the jurisdiction of the Westside Irrigation District (Figure 4.4-1). The remaining area (approximately 1,570 acres), primarily located north of Byron Bethany Road, is not within the jurisdiction of any irrigation district. Approximately six of the 1,570 acres not within the jurisdiction of a district are located at the southwest corner of the project site (Figure 4.4-1).

BBID is separated into northern and southern service areas divided by the intake channel to the California Aqueduct (Figure 4.4-1). The northern service area serves agricultural users in portions of Contra Costa County, while the southern service area serves agricultural users in portions of Contra Costa, San Joaquin, and Alameda counties. The project site is located within and adjacent to the southern service area of BBID which is 10,500 acres in size. Between 1976 and 1988, 3,978 to 5,233 acres of land were irrigated with water from BBID in the southern service area (Trimark Communities, 1991a).

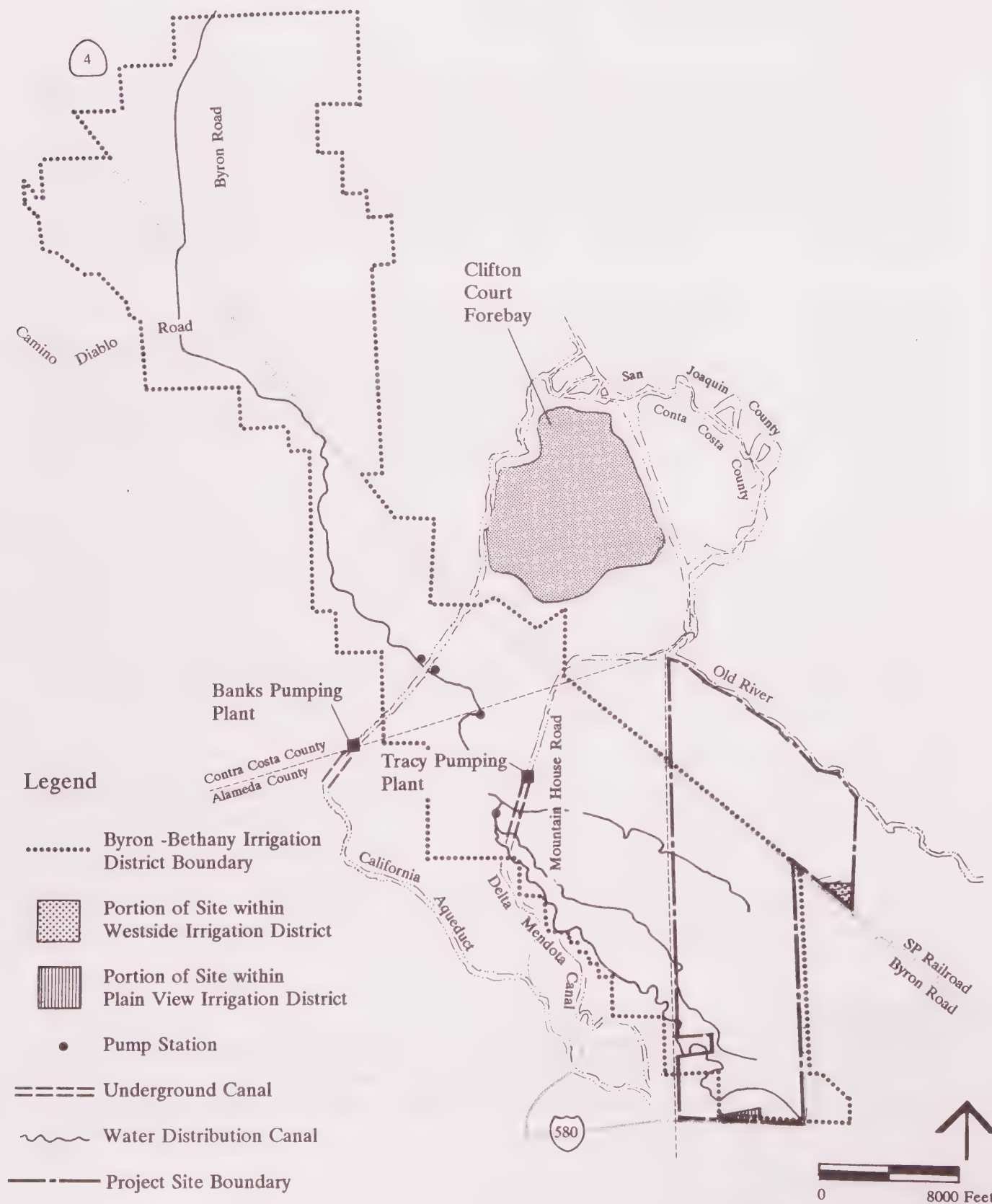
Water Supply

BBID withdraws raw water from the intake to the California Aqueduct under a pre-1914 appropriative water right to divert water from the Sacramento-San Joaquin Delta. This water may be used for municipal, industrial, and agricultural uses (Houston, 1914). Current deliveries are only to agricultural customers. Pre-1914 water rights are quantified by the amount of water actually used by the water rights holder up to the maximum amount of ~~approximately 16,000~~ **1,610** acre-feet (AF) per day. BBID has never withdrawn its maximum claim from the Delta (Specht, 1991a). The water demands for the BBID service area and for the project site are discussed below. A list of the BBID water rights is included in Appendix 10.6.

Those portions of the project site that are not under the jurisdiction of BBID include approximately 1,635 acres of irrigated land and 115 acres that are not irrigated. Water for the irrigated areas has been provided under riparian rights held by the landowners ~~or~~ from the Westside Irrigation District Inlet **and from the Plain View Water District Inlet** (Trimark Communities, 1991a). Riparian water rights are associated with ownership of property directly adjacent to a water resource. These rights cannot be separated from the ownership of the parcel and must be used on the parcel adjacent to the resource. It may be possible to transfer these rights to the proposed project subject to the approval of the State Water Resources Control Board (SWRCB).

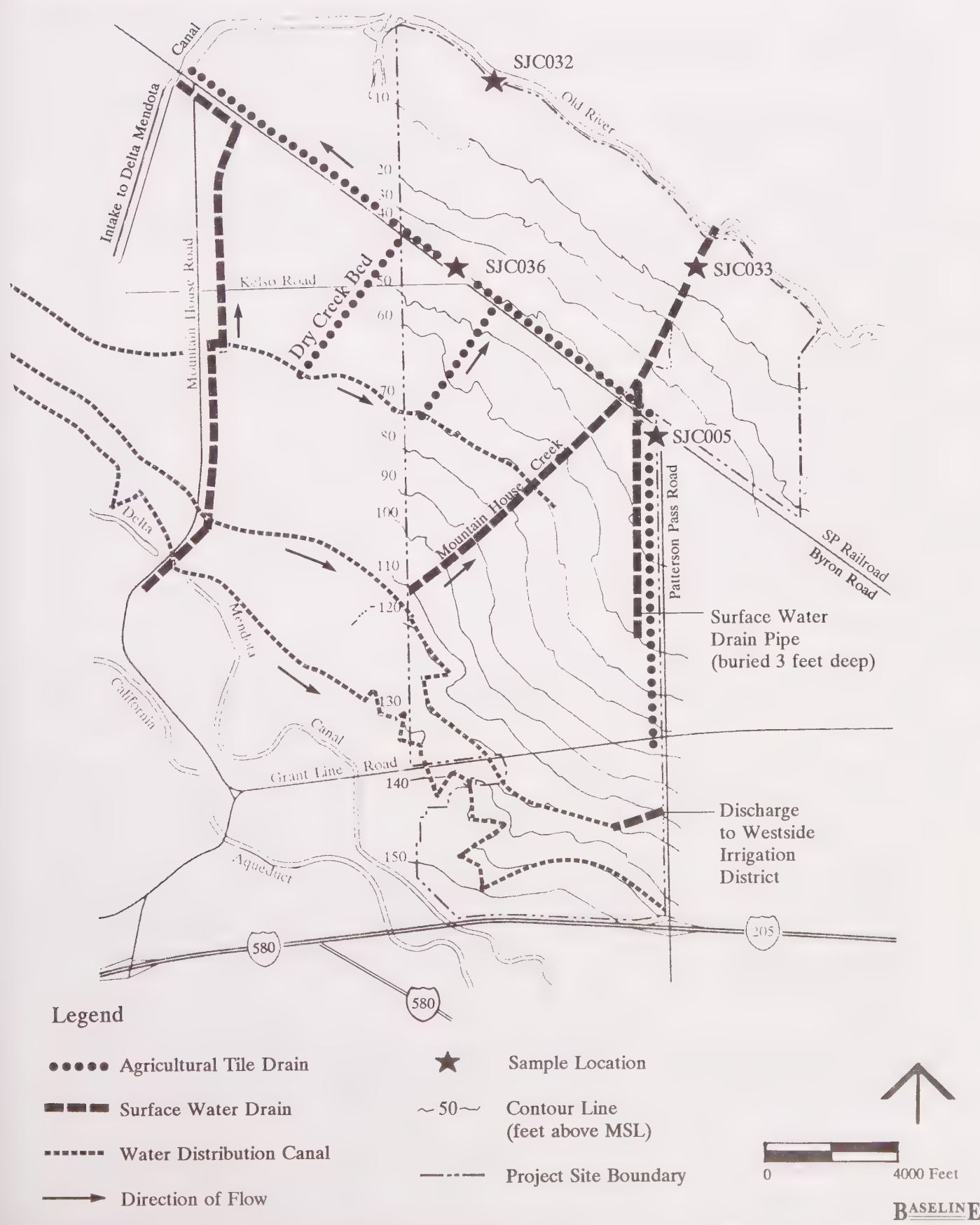
Existing Infrastructure

The main water delivery canals that service the project site are located along the 70-foot, 120-foot, and 155-foot elevation contours (Figure 4.4-2). The canals are piped underneath Mountain House Creek and laterals branch off the main canals. Farmers manually raise sluice gates to access irrigation water in the canals that



BYRON - BETHANY CANALS AND DRAINAGE SYSTEM

Figure 4.4-2



4.4 PUBLIC UTILITIES

they have ordered. Any excess water remaining in the canals is drained to Old River via Mountain House Creek or other surface drainage channels (Figure 4.4-2).

BBID operates pump stations located on the northwest and southeast sides of the intake channel to the California Aqueduct (Figure 4.4-1). The pump station on the northwest side of the intake channel has a capacity of 110 cubic feet per second (cfs) and supplies water to the northern service area. The southeast pump station supplies water to the southern service area in which the project site is located. This pump station consists of three pumps with a combined capacity of 100 cfs and lifts water from the intake at the California Aqueduct to an elevation of 45 feet. Two additional pump stations are operated to lift water to the three canals which cross the project site.

Water Quality

To monitor the quality of the water that BBID delivers to customers, samples are collected on a regular basis by California Department of Water Resources (DWR). The quality of BBID's source water between March 1982 and September 1990 is summarized in Appendix 10.7 (Table 10.7-1). Source water samples are collected from Banks Pumping Plant located at the head of the California Aqueduct. In addition to the compounds listed in Appendix 10.7, DWR analyzes the water samples from Banks Pumping Plant for chlorinated organic pesticides, organic phosphate pesticides, herbicides, carbamates, and purgeable organics on a quarterly basis. During 1990 three compounds in these categories, Diuron, 2,4-D, and trichloroethylene, were identified above detection limits (Appendix 10.7). These compounds were detected at levels well below the applicable drinking water Maximum Contaminant Levels.

Existing Water Demand

Between 1976 and 1988, BBID withdrew between 24,023 and 55,387 AF per year of water, with an average of 39,000 AF per year, for both the northern and southern service areas.¹ Water use in the southern service area has ranged between 12,044 and 22,073 AF and averaged 17,161 AF per year during the same period.

Within the project site, between 5,927 and 10,127 AF per year (average of 8,125 AF per year) were used during the 13-year period of measurements, which is equivalent to approximately 47 percent of the average water demand for the whole southern service area of BBID and 21 percent of the total BBID demand.

Irrigation in the project area normally occurs between April and October each year, although BBID has provided water during other months depending on farmer demands. The water application rate ranged from 2.6 to 4.2 AF per acre per year in BBID's southern service area between 1976 and 1988 (Trimark Communities, 1991a). The actual water used is dependent on the acres of land in production and the weather during the year.

¹Flow meters measure instantaneous and cumulative flow rates in all BBID pump stations. In addition, propeller meters are located throughout the distribution system to measure water volumes delivered to each farmer.

The primary methods for irrigation include flooding entire fields or flooding furrows between crop rows. Surface runoff from irrigation, or tailwater, collects in ditches and drains (Figure 4.4-2). Tailwater is used for irrigating fields at lower elevations and the unused portion eventually reaches Old River. The applicant estimates that approximately ten percent of the water applied to the fields runs off to Old River (Trimark Communities, 1991a). With the exception of water reaching Mountain House Creek, water collected in farm ditches north of Byron Road is pumped into Old River by private farmers in the area.

Those portions of the project site that are not under the jurisdiction of BBID include approximately 1,635 acres of irrigated land. The applicant calculates that the water demand for these areas has averaged 5,722 AF per year based on an average use of 3.5 AF per acre per year (Trimark Communities, 1991a). The irrigation water for the acreage north of Byron Road is currently being taken from Old River as riparian rights. If this area is annexed to BBID, these riparian rights (i.e., the water) would be freed up.

Impacts and Mitigation Measures

An assessment of the potential impacts of the project on water supply begins with a comparison of existing potable water supplies with the demand created by the project. Identifying gaps between water supply and demand or the lack of an institutional framework or agreements to deliver potable water to the site are part of an analysis of water supply. While such gaps between supply and demand are not in themselves technically significant environmental impacts (defined by CEQA as a "substantial adverse change in the physical environment"), the imbalance could affect proposals to obtain an adequate water supply on-site which could have a direct impact on the environment. Potential significant environmental impacts could occur to water resources, including groundwater and surface water. For water treatment, a significant environmental impact would be the inability to meet Federal and State drinking water standards.

Disposal of water treatment process sludge that does not meet Federal and State regulations could result in significant public health impacts and water quality impacts. A significant impact could result from uncontrolled releases of hazardous materials used as part of water treatment.

Water Supply

The applicant proposes to purchase water for the project from the Byron-Bethany Irrigation District (BBID). Although BBID has provided water primarily for agricultural irrigation in the past, its water rights are based on a pre-1914 agreement that allows use for municipal and industrial purposes (Houston, 1914). This agreement is included in Appendix 10.6. ~~BBID is evaluating alternative institutional arrangements for water management for municipal and industrial use of water. One option could be storing water in Los Vaqueros Reservoir, which is planned by the Contra Costa Water District. However, the Los Vaqueros Reservoir is sized to serve only development within its service area and sphere of influence, which does not extend into San Joaquin County (Pisila, 1991).~~ **BBID has evaluated several alternative institutional arrangements for water management for municipal and industrial use, including participation in the Los Vaqueros Project (LVP). Both BBID and Trimark Communities discussed participation in the LVP with Contra Costa Water District (CCWD), but withdrew from the negotiations in 1989. Since that time, CCWD**

has designed project alternatives and conducted environmental review of the project based on a planning area defined as the CCWD "service area as of fall of 1989 (CCWD's existing boundaries and sphere of influence) and the areas that extend beyond this boundary that are within the planning jurisdiction of CCWD raw water customers." This area does not extend into San Joaquin County. The forthcoming LVP Stage II DEIR/DEIS examines five alternative projects, all based on the planning area defined above. Any expansion of the planning area would require additional environmental documentation (Gregg, 1992).

The District has indicated its willingness to cooperate with the applicant in developing this water supply (Carvalho, 1989) (a letter to this effect is also included in Appendix 10.6). The project applicant proposes

4.4 PUBLIC UTILITIES

to limit water use on the entire project site to the average past water demand for the irrigated land within the BBID boundary, which would be 8,125 acre-feet per year (AF/year).

Impact

4.4.1-1 If lands within the project site that are currently outside the Byron-Bethany Irrigation District (BBID) were not annexed, development could not occur until alternative water sources were secured. If groundwater resources were available and developed in those portions, overdrafting of groundwater may occur.

The entire project site is not within the boundaries of BBID. Development outside of BBID boundaries would require an alternative source of water for on-site water demand. One option would be to rely on local groundwater; however, local groundwater resources have not been demonstrated as a reliable source of year-round supply. Developing potential groundwater resources without thorough characterization of the aquifers, including identification of sustainable yields, could result in overdrafting.

Those areas on the project site outside of BBID district boundaries, including those within the Westside **and Plain View** Irrigation Districts, would require annexation into the BBID water district to provide water for all lands not currently within BBID. The applicant has proposed annexation to BBID for the entire project site. The administrative procedures for annexation of these areas would begin with discussion, review, and agreement between BBID Board of Directors and the applicant. Once an annexation agreement between BBID and the applicant were finalized, either BBID or the applicant would formally apply to the appropriate Local Agency Formation Commission (LAFCO) to process the annexation request. LAFCO functions to regulate changes in the structure of local government agencies, including cities and special districts. These changes may include annexations, withdrawals, incorporation, formations, and consolidations or dissolutions.

BBID is a multi-jurisdictional special district that provides water to San Joaquin, Contra Costa, and Alameda counties. Since BBID's main office is in Byron, located in Contra Costa County, the Contra Costa County LAFCO is considered the principal county and would administer the annexation. However, because the proposed annexation site is located in San Joaquin County, it is also possible that, with a transfer of jurisdiction, San Joaquin County LAFCO could administer the annexation. ~~The San Joaquin LAFCO, however, does not prefer to transfer jurisdiction (Scott, 1991).~~ **According to Contra Costa County LAFCO, if that agency is the hearing body with jurisdiction of the BBID annexation, San Joaquin County would need to approve a property tax agreement with Contra Costa County prior to consideration.**

According to the San Joaquin County LAFCO, if that agency receives the annexation application and takes jurisdiction over the BBID annexation, the first step would be to initiate action through the Commission to request transfer of LAFCO jurisdiction. Since the proposed project would simultaneously annex and detach territory involving three districts, it would be processed as a reorganization. In that case, San Joaquin LAFCO would become the principal LAFCO with jurisdiction, and no transfer of jurisdiction would be necessary. Prior to approval of the BBID

reorganization, San Joaquin LAFCO would have to amend its present sphere of influence for the three districts to include or exclude the affected territory.

The annexation procedures include the following steps:

- Determine which LAFCO would administer the annexation.
- The applicant files an application for annexation in the form of a resolution or a petition.
- If the application includes written consent of all the landowners within the requested annexation area, the LAFCO can act without public notice and hearing and can authorize BBID to proceed. However, notice and opportunity to request a public hearing must be given to agencies and landowners whose

4.4 PUBLIC UTILITIES

boundaries are affected. If the application does not include written consent of all the landowners, LAFCO holds a public hearing to consider the annexation.

- Upon approval by LAFCO, BBID would hold a public hearing unless authorized by LAFCO to proceed without further hearings. The BBID may: 1) resolve to approve the annexation proposal if less than 25 percent of the landowners or registered voters protest; 2) hold an election if 25 to 50 percent of the landowners or voters protest; or, 3) terminate the proceedings.
- Upon approval of annexation by BBID, BBID would submit the required fees to the State Board of Equalization, the Executive Officer of LAFCO would certify completion of the annexation process, and a statement of boundary changes would be issued.

Whether the San Joaquin County LAFCO or the Contra Costa County LAFCO take jurisdiction, the annexation would also have to be consistent with the sphere of influence for BBID. In San Joaquin County, the sphere of influence boundary is the same as the district boundary. In processing the annexation, the sphere of influence boundary would be changed first, followed by the annexation action (Scott, 1992).

The project applicant currently owns or has an option to buy 9 of the 17 parcels outside of current district boundaries, about 84 percent of the land being considered for annexation. The area of the project site within the Westside Irrigation District consists of three parcels **plus a portion of a parcel in the Plain View Water District**. The project applicant currently has an option to buy 150 acres of the 200 acres within the Westside Irrigation District (Trimark Communities, 1990). A detailed description of the annexation process is included in Appendix 10.6.

Mitigation Measures

- 4.4.1-1(a) *Annexation of the unincorporated portions of the project site and of the portions of the project site that are within the Westside Irrigation District **and Plain View Water District** should be initiated. The annexation negotiations should be ~~initiated~~ **completed** prior to the approval of the Specific Plan through the Contra Costa County or San Joaquin County Local Agency Formation Commission. These negotiations should ascertain whether annexation of the unserved portions of the project site and the portions of the project site within the Westside Irrigation District **and Plain View Water District** to BBID is possible.*
- 4.4.1-1(b) *If annexation to BBID were not approved, the applicant should secure an adequate water supply for the areas outside BBID prior to approval of the Specific Plan. If groundwater resources were to be used, a thorough hydrogeological assessment of local aquifers must be performed. Alternatives could include: scaling down the project to fit wholly within the boundaries of BBID; **use of available riparian water rights that are in place for land north of Byron Road;** developing a conjunctive use plan which entails the storage of surface water in a groundwater*

4.4 PUBLIC UTILITIES

basin; obtaining a separate water supply from the State Water Project or Federal Central Valley Project; and demonstrating adequate groundwater resources to serve the project.

Impact

4.4.1-2 If the State Water Resources Control Board (SWRCB) denies BBID's application for winter water rights, the absence of a year-round surface water supply to the project could result in the lack of a surface water supply to the project during the winter months. If groundwater resources were available and developed in the project to augment the surface water supply, overdrafting of local groundwater may occur if no alternate winter water supply is procured.

4.4 PUBLIC UTILITIES

The proposed source of water for the project site has historically not been provided during the entire year. The past annual water usage at the project site occurred during the period from March 15 to October 15 of each year for the past 15 years (Trimark Communities, 1991a). The pre-1914 water rights for BBID are based on past use. BBID has applied for winter water rights from the SWRCB (Specht, 1991b). The application is currently under consideration. The State's response to the initial application included a request for additional documentation regarding justification for use during the winter months by defining specific uses and additional documentation regarding mapping of the proposed distribution system. BBID is working with the Contra Costa Water District to fulfill these requests (Specht, 1991d).

Mitigation Measure

4.4.1-2 *The project proponent should demonstrate a reliable water supply throughout the calendar year prior to approval of the Specific Plan.²*

Impact

4.4.1-3 **Changing part of BBID's service area from agricultural water use to municipal/industrial water use would create institutional issues requiring resolution. Without resolution, a reliable water supply could not be guaranteed. Indirectly, impacts to agricultural operations could occur due to the potential for rising water costs.**

Bay-Delta Hearings. BBID has pre-1914 appropriative water rights for withdrawing water from the Delta. These rights allow the District to withdraw water for beneficial uses within its boundary. The SWRCB, responsible for administering water rights and protecting water quality within California, is conducting Bay-Delta Hearings to collect testimony and data regarding the health of the San Francisco Bay-estuary. The Bay-Delta hearings can affect water supply issues throughout the Byron-Bethany Irrigation District. The hearings are divided into several phases: Phase I, Water Quality Phase, Scoping Phase, and Water Right Phase. Phase I and the Water Quality Phase have been completed with the adoption of the Pollution Policy Document and the Water Quality Control Plan for Salinity. The State Board has begun the Scoping Phase. The Water Right Phase is expected to begin in the summer of 1992 and last through the winter. At the close of the hearing, the SWRCB is expected to issue a Water Right Decision for the Delta that will replace an existing decision. It is difficult to predict the content of the anticipated Water Right Decision. If increased outflows from the Delta are determined to be necessary to protect the health of the Delta and San Francisco Bay, existing water rights for the Sacramento or San Joaquin River, tributaries to the two rivers, and the Delta may have to be altered. All water rights that affect flow in the Bay-Delta system will be considered. Implementation of the anticipated water right decision may be incremental, such that larger users are targeted first and smaller users affected later (SWRCB, 1990). Possible scenarios included reducing deliveries to the

²Options could include one or more of the following: BBID obtains winter water rights from the SWRCB and signs a written agreement to supply water to Mountain House throughout the calendar year; and/or applicant develops storage capacity to store water obtained from BBID from March 15 to October 15 to serve the Mountain House users during the winter months.

large Central Valley water projects and/or reducing the water rights for the largest users (divert greater than 1,000 cubic feet per second, or store greater than 100,000 acre-feet in a reservoir) within the watershed's tributary to the Sacramento and San Joaquin rivers. The smaller the water user, the less likely the upcoming hearings will immediately affect the water rights of that user (Winternitz, 1991). BBID's existing water right will probably not be affected as a result of the upcoming hearing because the volume of water the district withdraws is small relative to the largest diverters and to the Central Valley projects.

If BBID's water rights were reduced and the project were developed, a conflict could arise between the municipal/industrial users in the project and the remaining agricultural users in BBID. Because municipal/industrial use of water is considered a "higher" use, the supply for the agricultural users may become severely limited (Specht, 1991b). Since BBID is currently serving primarily agricultural users, the BBID Board of Directors may not approve an arrangement that could jeopardize the water supply for agricultural users within the district.

Existing Open Canals. BBID canals, located at elevations of 120 and 155 feet (Figure 4.4-2), are used to deliver raw water to customers along Grant Line Road and to customers east of the project site. BBID plans to decommission the portions of the canals within the project site when project construction begins (Specht, 1991b). Pipelines to replace the canals would be provided by the applicant to allow water deliveries to on-going BBID customers in these areas.

Lost Revenues during Project Buildout. For 1991, BBID is charging its agricultural customers \$19.50 per acre-foot of water. To repay bond indebtedness, BBID charges farmers an additional assessment of \$2.68 per \$100 assessed ~~value of farmland over 160 acres under one ownership~~ **valuation on land within the district boundaries.**

The total revenues to BBID from agricultural users would be reduced during phased project buildout. Areas within the project that are currently served by BBID would not be served during construction. Portions of the 1,500-acre area west of the project site that have been proposed for wastewater disposal following Phase I would no longer purchase BBID water (see Section 4.4.2, Wastewater).

It is difficult to predict the potential cost effects the project would have on existing customers within BBID. Cost impacts would be dependent on how the proposed project would affect the volume and timing of water sales in the southern service area. BBID would have to supply other users in the southern service area as the project develops. At the same time, land would be taken out of production within the project site as the project develops and water sales would decrease. BBID would have to maintain all of its pump stations and most of its canals serving the southern service area at the same time that water sales would decrease due to the development. While BBID has to maintain a fixed overhead cost in operations and maintenance, its revenue would decrease. This situation may force BBID to increase rates to existing customers in order to maintain the same level of service (Specht, 1991b).

4.4 PUBLIC UTILITIES

Mitigation Measure

- 4.4.1-3 *The applicant should execute an enforceable agreement with BBID prior to approval of the Specific Plan to supply water to the project site, which would protect BBID and its customers from economic loss and water interruption.*

Water Demand

The applicant has calculated water demand for each phase of the proposed development with and without wastewater reclamation. The calculations are based on water demands for the City of Stockton and peaking factors specified in the San Joaquin County Draft Improvement Standards (San Joaquin County Department of Public Works, 1991). The Draft Improvement Standards specify minimum requirements for determining adequate water supply capacity. The water demand determined by the applicant with and without wastewater reclamation and water demand calculated strictly based on the County Draft Improvement Standards are presented in Table 4.4-1.

Impact

- 4.4.1-4 **The projected available supply of water to the project site (8,125 AF per year) is less than the project demand (10,391 AF per year) and could result in an inadequate water supply for the project. If groundwater resources were available and developed, over-drafting of local groundwater resources could occur.**

TABLE 4.4-1

**WATER DEMAND CALCULATIONS FOR
PROJECT SITE, BY PHASES**

	Annual Water Demand (AF/Year)	Average Daily Demand (MGD)	Maximum Daily Demand (MGD)	Maximum Hourly Demand (MGD)
Based on Draft County Improvement Standards				
Phase I	1,759	1.57	3.45	5.97
Phase II	2,710	2.42	5.32	9.20
Phase III	2,643	2.36	5.19	8.97
Phase IV	2,139	1.91	4.20	7.26
Total	9,251	8.26	18.16	31.40
Applicant's Computation with Wastewater Reclamation				
Phase I	1,552	1.39	3.05	5.27
Phase II	2,386	2.13	4.69	8.10
Phase III	2,370	2.12	4.66	8.04
Phase IV	1,968	1.76	3.87	6.68
Total	8,276	7.40	16.27	28.09
Applicant's Computation Without Wastewater Reclamation				
Phase I	2,116	2.23	3.91	6.97
Phase II	3,308	3.53	6.08	10.88
Phase III	2,808	2.76	5.32	9.36
Phase IV	2,159	2.03	4.15	7.24
Total	10,391	10.55	19.46	34.45

Source: Water demands based on Draft County Improvement Standards were calculated by BASELINE. * Source of other calculations is Trimark Communities, 1991b.

The magnitude of the water demand for the project, calculated using the Draft Improvement Standards, is between the two demands calculated by the applicant, with and without wastewater reclamation (Trimark Communities, 1991b). The average daily water demand calculated from the Draft Improvement Standards

at buildout, is 8.26 million gallons per day (MGD) (Table 4.4-1); corresponding to an annual demand of 9,250 AF/year. The average daily water demands calculated by the applicant are 7.4 MGD and 10.55 MGD with and without reclamation, respectively (8,276 AF/year and 10,391 AF/year) (Table 4.4-1).³ The applicant's total calculated water demand of 10,391 AF/year is used for a worst-case analysis in this DEIR to evaluate the adequacy of the proposed water supply.

The San Joaquin County Board of Supervisors adopted a water supply policy for the new development projects within the County. Resolution R-91-258 was adopted 2 April 1991 and states, "Any General Plan Amendment submitted to the County shall not result in increased demand upon the water supply currently available to the San Joaquin County" The policy can be interpreted as stating that the County will not approve of a proposed development that would have an ultimate water demand greater than the existing water demand on the land parcel(s) that is proposed for development. The calculated ultimate water demand for the project may exceed the existing water demand for the project site depending on the effectiveness of water conservation measures and wastewater reclamation. Guarantees must be provided by the applicant that the project would comply with the County water supply policy.

The applicant proposes to limit the water supply for the project to the average historical water use to the portion of the site under current BBID jurisdiction (8,125 AF/year). Water demand can be reduced from 10,391 AF/year to 8,125 AF/year or lower by implementing various wastewater reclamation and water conservation techniques.

On-Site Water Reclamation Opportunities. The applicant proposes to reduce the project water demand from 10,391 AF/year to 8,276 AF/year by using reclaimed wastewater to irrigate 1,377 acres of the project site. These 1,377 acres include a golf course (352 acres), parks (261 acres), landscaping on commercial property (70 acres), school property (130 acres), and open space such as a marina, landscaped easements, and landscaping along major roads (564 acres) (Trimark Communities, 1991b). It may not be appropriate to use reclaimed wastewater for irrigating approximately 131 acres along Mountain House Creek and Old River, because of the relatively high concentration of residual chlorine that is in the reclaimed water. If reclaimed wastewater runoff reaches the river or creek directly, the residual chlorine may adversely impact fish life, depending on the quality and quantity of the reclaimed wastewater.

If the land is irrigated with reclaimed wastewater, controls should be installed to capture all runoff and prevent it from entering the creek or river. By irrigating the golf course and parks with reclaimed wastewater at an average irrigation rate of 2.7 AF/year-acre (Raj, 1991), the annual potable water demand would be reduced by 1,655 AF/year. By irrigating the remaining acreage (764 acres) at varying irrigation rates depending on location-specific needs, the applicant would reduce demand by an additional 460 AF/year to reach the 8,276 AF/year demand level. Additional wastewater reclamation opportunities are available at the

³The annual demand without reclamation does not correspond with the applicant's calculated average daily demand because additional peaking factors are required in the average daily demand calculation to account for seasonal variation.

TABLE 4.4-2
WASTEWATER RECLAMATION OPPORTUNITIES

Type of Wastewater Reuse	Opportunity at Mountain House Site
Habitat enhancement	Old River Wetland Enhancement (proposed)
Air conditioning and cooling	Residences and commercial buildings (requires a dual distribution system)
Landscape irrigation	Areas throughout project site (proposed)
Agricultural irrigation	Areas north of railroad during Phase I. Areas west of project site after Phase I (proposed)
Vehicle washing facilities	Typical at many commercial facilities (requires a dual distribution system)
Toilet flushing in industrial and commercial structures	Such structures would be located throughout the project (requires a dual distribution system)
Street cleaning	Such activities would occur throughout the project area (requires a tanker truck hookup at the reclamation plant)
Sewer flushing	Such activities would occur throughout the project area (requires a tanker truck hookup at the reclamation plant)
Construction dust control	Such activities would occur throughout the project area (requires a tanker truck hookup at the reclamation plant)
Indirect potable reuse	Supplement available groundwater resources through aquifer storage and recovery system

project site (Table 4.4-2). Several of these opportunities require installation of a dual distribution system during project construction. A dual distribution system involves providing separate distribution pipelines to deliver reclaimed treated wastewater for uses such as vehicle washing and toilet flushing in industrial and commercial buildings. Goals and strategies and a conceptual implementation plan for a water reclamation program are included in Appendix 10.8.

As discussed above, BBID's water rights may be changed in the future depending on the outcome of the Bay-Delta Hearings. In anticipation of the possibility, and in response to the trend of decreasing water resources, a prudent approach would be to reduce potable water demand to the maximum extent possible.

Water Conservation. The applicant has suggested the possibility of installing water saving features such as low-flow shower heads and toilets throughout the development. A 15 percent reduction in potable water demand is expected by implementation of these features (Trimark Communities, 1991c). Additional efforts

to conserve water may include an aggressive public education campaign, tiered water rate schedule, and extensive use of xeric landscaping.

Mitigation Measures

- 4.4.1-4(a) *Wastewater reclamation and water conservation techniques should be implemented to reduce the potable water demand to the supply level of 8,125 AF/year or lower. Such techniques should be fully described in the Specific Plan for the project.*
- 4.4.1-4(b) *For the Specific Plan, the applicant should address the potential for installation of a dual distribution system. If a dual distribution system were not included, a detailed justification should be supplied.*
- 4.4.1-4(c) *Water conservation measures should be incorporated into the design of the project to the maximum extent possible. These measures should be incorporated into the Specific Plan.*
- 4.4.1-4(d) *Overall water demand could be reduced by a reduction in project density. This mitigation measure would only be needed if other strategies did not reduce total water demand to 8,125 AF/year or lower. **A subsequent GPA could be required to reflect required lower densities.***

An inadequate emergency water storage system could result in overdraft of the local groundwater resources. Treated water storage would be required to accommodate hourly fluctuations in water demand, fire flow requirements, and accidents or other emergencies. The applicant's calculation for storage includes fire flow requirements of 4,000 gallons per minute (gpm) for a four-hour duration, operational storage of thirty percent of maximum daily demand, and emergency storage of two times the average daily demand (Trimark Communities, 1991a). The Draft County Improvement Standards only specify minimum emergency storage requirements and the applicant's assumptions for emergency storage are more conservative. Storage requirement calculations using the applicant's water demand calculation with and without wastewater reclamation are summarized in Table 4.4-3. The proposed storage capacities appear to be adequate.

Water Treatment

The applicant proposes to provide a 16.3 MGD water treatment plant designed to include flocculation, sedimentation, filtration, and disinfection. Providing untreated or inadequately treated water for use within the project could increase public health risks. The water quality requirements that must be met by the drinking water treated at the new facility are summarized in Appendix 10.7.

Impact

- 4.4.1-5 **A potable water supply for the project may not be available to supply the early years of the project if the permit needed to operate a public drinking water system were not obtained in a timely manner or the design of the water treatment plant does not provide all the treatment necessary to meet drinking water standards.**

4.4 PUBLIC UTILITIES

Initial monitoring of the source water consisting of one year of quarterly sampling would likely be required for a specific list of inorganic and organic compounds and physical characteristics. Based on these data, the treatment plant must be designed to treat the source water to attain the drinking water standards. **The plant design must be approved and permitted by the Office of Drinking Water, California Department of Health Services prior to project construction.** In addition, each operator of a public water system is required to develop a monitoring program and to submit the program to the California Department of ~~Toxic Substances Control (DTSC)~~ **Health Services, Office of Drinking Water** for approval. Once the treatment

plant is operational, routine monitoring of the source water and/or treated water delivered to customers is required to monitor compliance with the primary and secondary drinking water standards. In general, monthly or quarterly monitoring of the inorganic and organic constituents, and physical characteristics is required; the number of bacteriological samples depends on the number of service connections. For a water system with 20,000 service connections, 20 bacteriological samples per week from throughout the distribution system would be required. ~~DTSC~~ **The California Department of Health Services, Office of Drinking Water** may modify monitoring requirements based on a case-by-case review.

Mitigation Measure

- 4.4.1-5 *The applicant should initiate the permitting process with the California Department of ~~Toxic Substances Control (DTSC)~~ **Health Services, Office of Drinking Water** and begin any source water sampling necessary to fulfill the regulations and to aid in the design of the water treatment plant prior to approval of the Specific Plan.*

Impact

- 4.4.1-6 **An inadequate water treatment sludge disposal system could adversely impact local water quality.**

The applicant has not addressed the treatment and disposal of water treatment sludge. Inadequate treatment and disposal of sludge from the water treatment process could result in contamination of surface water and

TABLE 4.4-3

TREATED WATER STORAGE REQUIREMENTS (million gallons)

	Emergency Storage	Fire Flow Storage	Operationa l Storage	Total Storage
With Reclamation				
Phase I	2.78	0.96	0.92	4.66
Phase II	4.26	--*	1.41	5.67
Phase III	4.24	--*	1.40	5.64
Phase IV	3.52	--*	1.16	4.68
Total	14.8	0.96	4.89	20.65
Without Reclamation				
Phase I	4.46	0.96	1.17	6.59
Phase II	7.06	--*	1.82	8.88
Phase III	5.52	--*	1.6	7.12
Phase IV	4.06	--*	1.24	5.3
Total	21.10	0.96	5.83	27.89

* It is assumed that all fire flow storage would be provided during Phase I.

Source: Trimark Communities, 1991b.

groundwater. Inadequate containment of the sludge during drying could result in runoff into nearby streams and storm drains. Disposal (landfilling or landspreading) of inadequately dried sludge could cause leaching of contaminants into the local groundwater.

During treatment of raw water, solids are removed from the raw water following the flocculation and sedimentation processes. Solids are also removed during the filtration process. Solids in the filter backwash are generally mixed with the plant's raw water influent and are removed in the sedimentation process. The resulting sludge must be treated and disposed of in accordance with regulatory requirements.

The design of the treatment system must include a method for disposal of water treatment sludge. The sludge consists of water, solids removed from the raw water, and coagulants such as alum and polymer that are added during the flocculation process to improve solids removal. A summary of the estimated quantities of sludge produced from the project's proposed treatment plant is presented in Table 4.4-4.

Sludge disposal options include land filling, land spreading, dedicated land disposal, and industrial reuse (Appendix 10.9). These disposal options would involve drying the sludge in lagoons at the plant site. Three one-acre lagoons would be required to handle the water treatment sludge produced at the worst-case design flow of 10.55 MGD (Sanks, 1978). This estimate is based on a one-year drying period, a maximum sludge lagoon depth of eight feet, and a two lagoon system to allow simultaneous filling and drying.⁴ **The subsequent disposal of dried sludge would require a waste discharge permit from the Central Valley Regional Water Quality Control Board.**

Alternatively, water treatment sludge could be discharged into the wastewater treatment collection system and then removed again at the wastewater treatment plant. In this way the water treatment sludge would become part of the wastewater treatment plant sludge.

Mitigation Measure

4.4.1-6 *A sludge management plan, for both water treatment and wastewater treatment sludge, should be developed as part of the project's Specific Plan. The plan should include a detailed analysis of all disposal options and beneficial reuse of the sludge to the maximum extent possible.*

TABLE 4.4-4

ESTIMATED WATER TREATMENT SLUDGE QUANTITIES

Scenario	Average Daily Water Demand (MGD)	Estimated Sludge Quantity ¹ Generation (lb/day)	Estimated Sludge Quantity ² Generation (gal/day)
With Water Reclamation			
Phase I	1.39	279	1,340
Phase II	3.52	707	3,395
Phase III	5.64	1,133	5,439
Phase IV	7.4	1,486	7,136
Without Water Reclamation			
Phase I	2.23	448	2,151
Phase II	5.76	1,157	5,555
Phase III	8.52	1,711	8,216
Phase IV	10.55	2,119	10,174

¹ Calculation based on the following equation.
Quantity = $8.34(Q)((\text{Alum Dosage})(0.44 + \text{SS} + \text{Polymer Dosage}))$ (CH2M HILL, 1990):
SS = Suspended Solids = 10 mg/l (James Montgomery Consulting Engineers, 1983)
Polymer Dosage = 0 mg/l (Lang, 1991)

² Calculation based on a total content in the sludge of 2.5 percent solids of the total weight (Fair, Geyer, and Okun, 1968).

⁴With water reclamation, only two one-acre lagoons would be required for sludge drying.

4.4 PUBLIC UTILITIES

Impact

4.4.1-7 An uncontrolled release of hazardous materials associated with water treatment practices could potentially occur and impact water resources and public health.

Water treatment activities can include the use of hazardous materials such as chlorine (liquid or gas), soda ash, fluorspar, and alum. Because a specific treatment method has not been proposed by the applicant, this assessment assumes the use of the standard treatment chemicals. Two types of potential impacts would be associated with the uncontrolled release of hazardous materials potentially transported to, and used or stored at, the water treatment plant: airborne releases and spills. These impacts and associated hazardous materials are described in Appendix 10.7.

Mitigation Measures

4.4.1-7(a) *The applicant should develop a **preliminary Hazardous Materials Business Plan** to address material stored, used, and generated by the proposed on-site water treatment plant. This Plan should be included as part of the project's Specific Plan.*

4.4.1-7(b) *Prior to design of the water treatment plant, chemicals should be carefully selected for use during operations to minimize the potential for accidental releases. Chemicals to be used at the water treatment plant should be specified in the Specific Plan. The design of the chemical handling and storage facilities in the water treatment plant should be designed to provide secondary containment and safety features to minimize and effectively mitigate accidental releases.*

4.4.2 WASTEWATER

Setting

Existing Wastewater Discharges

Existing wastewater discharges in the project area include approximately 70 septic tank and leach field systems, dairy waste ponds, and agricultural drainage. The project site is not currently served by any public wastewater system.

Approximately 23 private residences are located within the project site along Grant Line Road, while approximately 13 residences are located along and north of Byron Road. All of these residences have septic tanks and leach fields.

Two dairies operate along Patterson Pass Road within or adjacent to the project site with a total of approximately 1,400 cows. Each dairy operates an animal waste holding pond where animal waste is deposited for solids settling. The liquids from the ponds are then used for irrigating adjacent lands. The solids are periodically removed and used as fertilizer. Complaints of uncontained animal wastes have not been filed recently with the County (Kaufman, 1991).

BBID owns and maintains agricultural tile drainage and surface drainage systems which collect excess irrigation water and shallow groundwater within the project site (Figure 4.4-2). Mountain House Creek is the primary surface drainage channel in the project area. Excess water in the water distribution canals drains into the Creek from the 70- and 120-foot water distribution canals (Figure 4.4-2). The other surface drainage maintained by BBID is a drain pipe buried approximately three feet below grade along Patterson Pass Road. The pipe collects surface runoff from adjacent farmlands that has collected in private sumps located along the road. The pipe discharges to Mountain House Creek north of Byron Road (Figure 4.4-2).

Agricultural tile drains are buried approximately eight feet below grade (Figure 4.4-2). Private agricultural tile drains under individual fields tie into BBID's tile drain system. One tile drain line, which originates at Grant Line Road, approximately 2,500 feet west of Patterson Pass Road, runs along Grant Line, Patterson Pass Road, and Byron roads. The water in this tile drain is pumped at a station on Byron Road and discharged into the intake channel of the Delta-Mendota Canal (Figure 4.4-2). A second tile drain line which originates at the intersection of the 70-foot water distribution canal and the County line, drains northeasterly and intersects the drain on Byron Road (Figure 4.4-2). Just to the west of the project site, a third drain line is buried under Dry Creek and drains northeasterly to intersect the drain line on Byron Road (Figure 4.4-2).

Quality of Existing Discharges. Water quality data of agricultural drainage from the project site from April 1986 through August 1987 are summarized in Appendix 10.9 (Table 10.9-2). The quality of the water samples did not exceed drinking water standards for heavy metals. Samples from all four locations exceeded the recommended drinking water standards for electrical conductivity and chloride (Appendix 10.9). Electrical conductivity is an indicator of the concentration of dissolved salts in the water. Samples from the two agricultural tile drains and the surface runoff ditch near Kelso Road also exceeded the recommended concentration for total dissolved solids (Appendix 10.9, Table 10.9-2). The drinking water standard for sulfate was exceeded in one surface drain sample (Appendix 10.9). It should be noted that not all the parameters with drinking water standards were analyzed for the study. The quality of wastewater discharged from the septic tank leach fields and the animal waste ponds has not been monitored.

Quality of the Receiving Water. Old River receives runoff from the project site and would receive wastewater discharges from the proposed project, if approved. The water in Old River passes the project site and may enter directly into the intake channel of the Delta-Mendota Canal under some flow conditions. The Bureau of Reclamation operates the Delta-Mendota Canal and collects water quality data at the Tracy Pumping Plant located at the head of the canal (Figure 4.4-1). A summary of the quality of this water from samples collected between February 1976 and February 1990 is presented in Appendix 10.9 (Table 10.9-3).

The waters in Old River have only been analyzed for a limited number of parameters by Bureau of Reclamation. Of the parameters analyzed, only chloride, sulfate, total dissolved solids, and turbidity have drinking water standards. Although the highest concentrations of chloride, sulfate, and total dissolved solids were above the drinking water standards, the average concentrations met the standards. This indicates that,

4.4 PUBLIC UTILITIES

generally, the water meets the drinking water standards for these parameters, but that these standards are exceeded on occasions.

Impacts and Mitigation Measures

The potential environmental impacts of the proposed wastewater treatment system would be associated with the amount of wastewater generated, the treatment process, and the disposal system. The key measure in determining a significant impact for wastewater is whether the system meets Federal and State requirements. Not meeting these requirements could cause significant impacts to surface water and groundwater resources and to public health. Another significant impact could be caused by an uncontrolled release of hazardous materials used in the wastewater treatment process.

This section consists of an analysis of wastewater generation, disposal, and treatment. Wastewater generation rates will define the quantities of water that will be available for offsetting potable water demand and the quantities of water that must be disposed of using alternate means. The disposal means will define the level of treatment required.

Wastewater Generation

The applicant's projection of wastewater quantities for the project has been performed in accordance with the San Joaquin County Draft Improvement Standards with the exception of the residential contribution as directed by the County Public Works Department (Lopez, 1990). The wastewater flow calculations were based on the proposed population, commercial and industrial acreages, and school acreages. Projected flow rates for each phase of the development, both with and without water conservation, are summarized in Appendix 10.9 (Table 10.9-4). The project would generate significantly more wastewater without water conservation efforts than with water conservation efforts.

The applicant estimated that a 15 percent reduction in wastewater generation could be achieved by using water conservation measures such as low flow toilets and shower heads. As discussed in Section 4.4.1, additional water conservation measures could include using xeric landscaping and a leak detection and control program in the water distribution system. Descriptions of these techniques and potential implementation mechanisms are included in Appendix 10.8.

Wastewater Treatment and Disposal

The wastewater treatment plant is proposed to be located on the perimeter of the project site south of Old River and north of the SP Railroad and Byron Road. The area is at the northeastern edge of the site in an area designated for public use (Figure 3.7). In this location, this industrial-type use would be buffered from neighboring land uses. To the east of the proposed treatment plant outside of the project site boundary, agricultural and open space uses would remain. Directly to the north, the proposed plan includes open space, with low density residential uses beyond. A neighborhood park with elementary school is planned to the west in the middle of a medium-density residential area. To the south and southwest, a large area is designated

for general industrial uses. The wastewater treatment plant, as well as the water treatment plant, would be compatible with other industrial uses in this area. Since the prevailing winds flow to the east and southeast, odors that may be emitted would be blown away from the development. As a result, potentially sensitive residential land uses would be upwind from the source and would be buffered from potential impacts from the wastewater treatment plant. In addition, the Mountain House new town is designed to be "self-contained", with all of its supporting water, wastewater, and other services to be located within the boundaries of the site. If the plant were located off-site away from the proposed project, there could be growth-inducing impacts. Property owners of vacant land adjacent to the plant may propose to extend service lines from the wastewater or water treatment plant to support new islands of development in areas that are not designated for growth.

The applicant proposes to include the following processes in the treatment plant: secondary treatment, conventional filtration with coagulation, flocculation and sedimentation, and chlorination to an average coliform concentration of 2.2 most probable number (MPN). The proposed treatment processes meet the criteria for Class A reclaimed wastewater irrigation as defined by ~~DTSC~~ **the California Department of Health Services, Office of Drinking Water** (Appendix 10.9, Table 10.9-5). The water quality criteria used for designing the treatment plant for reclamation would be developed in conjunction with RWQCB and ~~DTSC~~ **the California Department of Health Services, Office of Drinking Water**. These criteria would be developed using the following process (MacDonald, 1991):

- The applicant would prepare a conceptual proposal for the treatment system. The proposal would include basic treatment processes and a water and solids balance for the proposed plant.
- The RWQCB and ~~DTSC~~ **the California Department of Health Services, Office of Drinking Water** would write draft permit effluent constituent and time of discharge limits.
- The applicant would develop the final treatment plant design, certifying that the treatment system will meet the draft criteria developed by the State agencies.
- RWQCB would review the final design for general consistency with standard design concepts including standard unit sizing and detention times for treatment processes.
- Prior to operation of the plant, RWQCB would develop final discharge limits and issue an NPDES permit.
- After operation of the plant begins, a monitoring and inspection program would be implemented by the plant operator subject to RWQCB's approval. A pretreatment program, if deemed necessary by RWQCB, would also be developed and initiated by the plant operator subject to the RWQCB's approval. The RWQCB would maintain oversight and surveillance activities over the treatment plant and reclamation program.

Impact

4.4.2-1 **Inadequately treated reclaimed wastewater may result in the discharge of untreated or partially treated wastewater to fields adjacent to the site that could impact local surface and groundwaters and public health.**

The applicant proposes to reclaim treated wastewater as a disposal method during nine months of the year. The applicant plans to reduce the ultimate project water demand from 10,391 AF/year to 8,276 AF/year through on-site reclamation methods (20.3 percent reduction). This estimated reduction in potable water demand is based on using reclaimed treated wastewater to irrigate 1,377 acres of the project site. The applicant also plans to use treated wastewater to irrigate up to 600 acres of the land available to the west of the project site to dispose of the remainder of the wastewater generated within the project (Trimark Communities, 1991c).

Use of reclaimed treated wastewater for agricultural or landscape irrigation purposes is subject to water quality and operational constraints. Considerations in implementing an irrigation-based water recycling program include the following:

- Compliance with treatment levels and system reliability criteria established by the **California Department of ~~Toxic Substances Control (DTSC)~~ Health Services, Office of Drinking Water;**
- Compliance with treatment levels and system reliability criteria established to ensure that the quality of the groundwater basin is not degraded;
- Review of the proposed system by the Central Valley Regional Water Quality Control Board (RWQCB); and
- Provision of adequate storage capacity.

A reclaimed wastewater irrigation system would be regulated by the California Department of ~~Toxic Substances Control (DTSC)~~ **Health Services, Office of Drinking Water**. Requirements for using reclaimed wastewater for irrigation have been developed by the DTSC included in Title 26, Division 22 of the California Code of Regulations (known as Title 22). A "discussion paper" regarding proposed changes to this code is currently circulating for public comment (DHS, 1990).

Requirements for bacterial and chemical quality of reclaimed water depend on the intended use. The four categories of reclaimed wastewater use, defined in the "discussion paper" (revised Title 22 regulations), are summarized in Table 10.9-5 in Appendix 10.9. In a system where separate distribution is not provided for each potential use, all reclaimed water must meet the most stringent standard (Class A).

Title 22 also includes reliability criteria for treatment plant unit processes involved in reclaimed water production. These requirements affect design, operation and maintenance of the reclamation system. Four features can be incorporated into a reclamation operation to improve reliability:

- Short-term retention or disposal. This system must be accomplished in dedicated basins or ponds for the purpose of storing or disposing of untreated or partially treated wastewater. The system must provide storage for at least 24 hours of flow.
- Long-term storage or disposal. This system can consist of ponds, reservoirs, percolation areas, or downstream sewers leading to other treatment or disposal facilities reserved for the treatment of untreated or partially treated wastewater. These facilities must be of sufficient capacity to provide storage or disposal for at least a 20-day period.
- The ability to divert reclaimed water that does not meet the designed quality to a more restricted use, which allows a lower level of treatment.

The Central Valley RWQCB Basin Plan does not include stipulations on agricultural water supply quality (RWQCB, 1990). Any limitations imposed by the RWQCB are developed on a case-by-case basis and are evaluated during the Board's review of operation plans for the irrigation reclamation system (MacDonald, 1991). Recycled water quality and quantity limitations are dependent on the type of crops grown and the configuration of the farming operation. The RWQCB is concerned with runoff of reclaimed wastewater into a surface water body because of the high residual chlorine that is in reclaimed water.

An optimized irrigation disposal system design involves sizing criteria based on the average supply of treated wastewater. The actual demand for irrigation water on a day-to-day basis would depend on climatological and crop factors. Thus, a reclaimed wastewater irrigation system would require storage to provide a reliable disposal capacity. The optimal storage capacity may be greater than the storage period defined in the Title 22 reliability requirements.

Mitigation Measures

- 4.4.2-1(a) *The applicant should initiate the permitting process with the **California Department of Health Services, Office of Drinking Water** ~~Toxic Substances Control (DTSC)~~ and the Central Valley Regional Water Quality Control Board for the proposed wastewater reclamation system prior to the Specific Plan. This would provide for early identification of constraints. The Wastewater Discharge Permit must be issued before construction begins.*
- 4.4.2-1(b) *The applicant should develop a reclaimed wastewater irrigation plan that includes specifications for individual irrigation system designs, irrigation practices, and monitoring of actual watering practice to determine compliance with permit restrictions. **The plan should also identify how adequate acreage necessary for irrigation with reclaimed water would be guaranteed.***

- 4.4.2-1(c) *For the Specific Plan, the applicant should provide a preliminary design and plant layout of the reclaimed wastewater treatment plant including water storage facilities.*

Impact

- 4.4.2-2 **Discharging treated wastewater or other waste to Old River could adversely impact local water resources and public health.**

The applicant proposes to discharge treated wastewater to Old River during periods when water cannot be reclaimed through irrigation. Discharge of treated wastewater to surface water at the project site would be regulated by the Central Valley Regional Quality Control Board in the form of a National Pollutant Discharge Elimination System (NPDES) permit (RWQCB, 1990). In permitting a discharge, two primary issues are considered by the Board: whether discharge to a surface water is the only available option for wastewater disposal and the water quality impacts on the receiving water (MacDonald, 1991). The estimated impacts on Old River are identified in Section 4.7 of this DEIR.

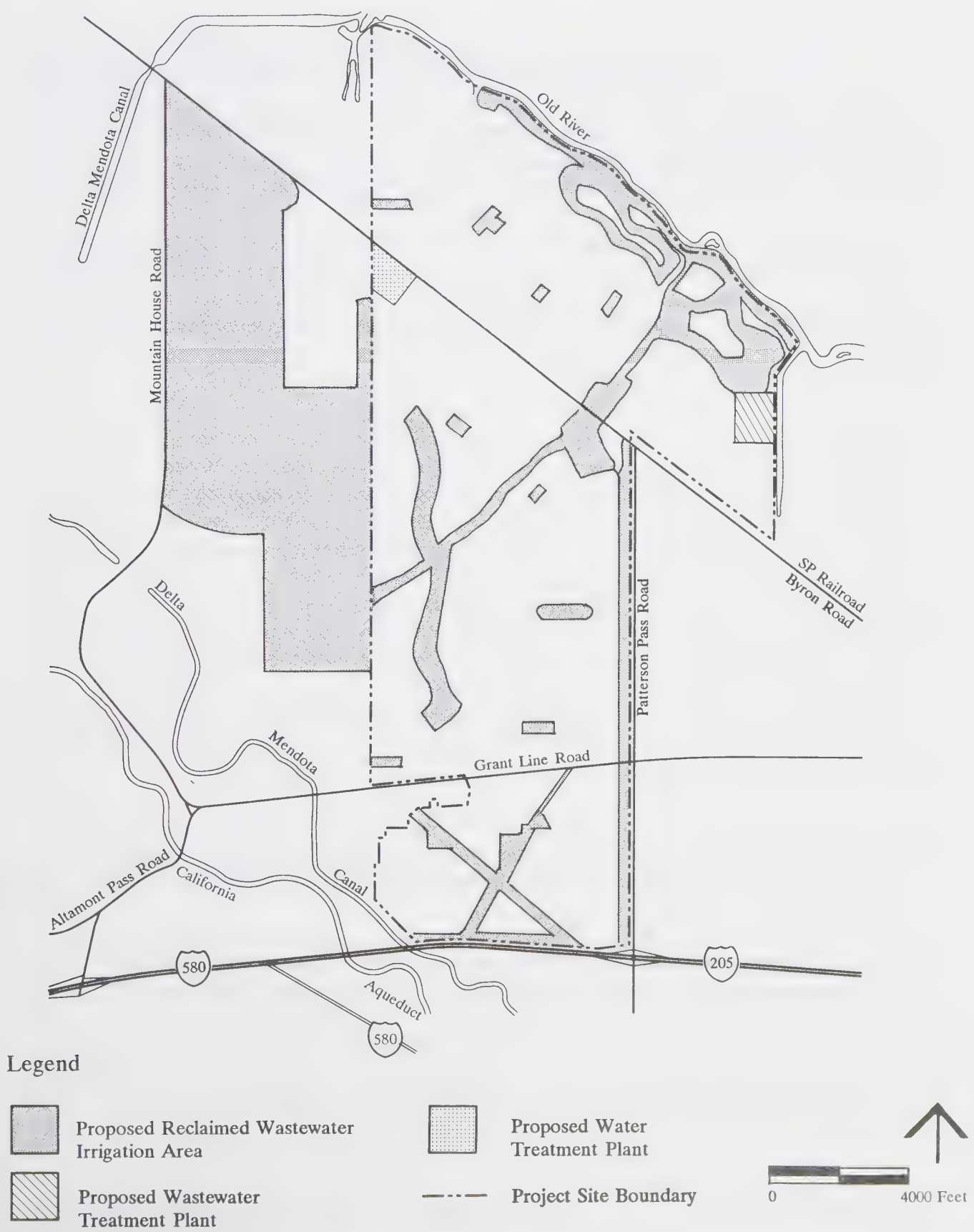
According to the Basin Plan for the Central Valley RWQCB, surface water discharges would not be allowed if other technically and economically-feasible alternatives existed (MacDonald, 1991). The applicant would be required to demonstrate that other alternatives for wastewater disposal were not available. The project includes access to approximately 1,500 acres of irrigated lands immediately west of the project that may be used for wastewater disposal (Figure 4.4-3). Plans to use up to 600 acres of these 1,500 acres have been identified (Trimark Communities, 1991c). Thus, additional area for wastewater disposal is available. To accomplish more reclamation, a storage system is required to store treated wastewater during those periods when irrigation cannot be practiced. For example, irrigation must be reduced or eliminated during winter. The storage design capacity is based on climatological, soil, and crop factors.

As described in the Setting section, agricultural tile drains exist across the project site that discharge to Old River. In an urban environment, these drains represent potential conduits for improperly disposed waste or wastewater to be discharged into Old River. The possibility exists for intentional or negligent individual practices to cause water quality impacts. BBID's tile drains discharge into the intake channel of the Delta-Mendota Canal. The RWQCB would likely require that all tile drains be removed or permanently plugged as an area becomes urbanized (Westcot, 1991). The applicant proposes to keep BBID's existing drain lines along Patterson Pass Road open until the last phase of the development. This plan could be appropriate as long as private drain lines are abandoned as the parcel is developed. The locations and outlets of the drains should be documented and the RWQCB should be consulted to determine the appropriate actions that would eliminate the potential for the drains to cause water quality impacts.

The Bureau of Reclamation has indicated strong resistance to the proposed treated wastewater discharge to Old River from this project (Capener, 1990). The Bureau finds the proposed discharge of treated wastewater and urban runoff to Old River unacceptable due to the proximity of the proposed discharge to the intake to the Delta-Mendota Canal, which is a source of potable water and irrigation water for communities and farms in the Central Valley.

PROPOSED RECLAIMED WASTEWATER IRRIGATION AREAS

Figure 4.4-3



Source: Trimark Communities, 1991c.

4.4 PUBLIC UTILITIES

Several technical and political constraints relate to a discharge of treated wastewater to Old River. Old River flows directly into the intake for the Delta-Mendota Canal and Clifton Court Forebay which is the intake to the California Aqueduct. The water quality of these sources has been degraded in the past due to salt water intrusion occurring as a result of reduced flows in the Delta, urban runoff, and agricultural runoff. The Bureau of Reclamation has proposed construction of temporary inflatable barriers to improve water quality (MacDonald, 1991). The barriers in the vicinity of the project are discussed in Section 4.7 of this DEIR.

A variety of additional wastewater reclamation opportunities exist at the project site (Table 4.4-2). Several of these opportunities require installing a dual distribution system during project construction. A dual distribution system involves providing separate distribution pipelines to deliver reclaimed treated wastewater for uses such as vehicle washing and toilet flushing in industrial and commercial buildings. Goals and strategies and a conceptual implementation plan for a water reclamation program are included in Appendix 10.8.

The applicant has proposed to use treated effluent from the wastewater treatment plant in a 40-acre wetland prior to discharging to Old River, assuming that discharge to the river occurs. Using wetlands to treat raw wastewater has been successful in removal of organics and nutrients. However, the use of wetlands for removal of nutrients from wastewater which has received advance wastewater treatment has not been demonstrated. Theoretically, this may be a plausible method of treatment for nutrient removal under specialized conditions. Much more planning and research would be needed to design an effective wetland treatment scheme. The operation of a wetland to reliably achieve a nutrient removal objective is difficult because of the large number of uncontrollable environmental factors. A pilot project in the City of Hayward where treated wastewater is being used to create and maintain wetland ponds has experienced ammonia toxicity problems associated with the un-nitrified wastewater (Burger, 1991). Ammonia is toxic to many forms of aquatic life. Also the fate of heavy metals in the wetlands is largely unknown. The ultimate discharge of wastewater from the wetland to Old River would still require an NPDES Permit from the RWQCB and would probably be scrutinized even more closely.

Nitrification of wastewater (i.e., converting organic nitrogen and ammonia-nitrogen to nitrate) is not done in many wastewater treatment plants. The organic nitrogen and ammonia-nitrogen is partially converted to un-ionized ammonia by natural biological and chemical processes that occur in wastewater treatment ponds. Un-ionized ammonia is toxic to aquatic life.

Some of the effluent limitations that the RWQCB would probably impose on the discharge to Old River to maintain water quality in local surface waters would include the following items (MacDonald, 1991):

- | | |
|------------------------------|--------------------------------|
| • Biochemical Oxygen Demand | 10 milligrams per liter (mg/L) |
| • Total Suspended Solids | 10 mg/L |
| • Un-ionized Ammonia Content | 0.02 mg/L |
| • Total Coliform Count | 2.2 MPN |

The applicant proposes to meet these treated effluent limitations. In addition, the following constraints would likely apply to a discharge of treated wastewater to Old River (MacDonald, 1991):

- Dilution of the discharged effluent would be required to maintain the total dissolved solids concentration in the receiving water below 500 mg/l. Thus, a discharge when the flow in Old River is low (e.g., as would occur with the inflatable barriers or during slack tide) would not be allowed.
- The temperature of the treated effluent discharge cannot be greater than 20° Fahrenheit above the temperature of the receiving water.
- The treated effluent discharge cannot raise the temperature of the receiving water greater than 1° Fahrenheit over an area greater than 25 percent of the cross-sectional area of the stream bed.
- An outfall diffuser to improve mixing within the receiving water would be required.

Mitigation Measures

- 4.4.2-2(a) *More on-site reclamation opportunities should be investigated to reduce the surface water discharge and to reduce the project's water demand. Such opportunities should be identified in the Specific Plan for the project.*
- 4.4.2-2(b) *An off-site reclamation system should be developed that is sized to meet as much wastewater as possible up to the entire annual flow. Such a system should be identified in the Specific Plan for the project.*
- 4.4.2-2(c) *If sufficient land were not available to reclaim all of the treated wastewater, an application for the proposed wastewater discharge to Old River should be submitted for consideration by the Central Valley Regional Water Quality Control Board prior to **Specific Plan approval and a permit should be obtained prior to project construction.***
- 4.4.2-2(d) *The wastewater treatment plant should be designed with a high degree of redundancy for every unit process to minimize the potential for incomplete treatment.*
- 4.4.2-2(e) *An aggressive public education campaign should be considered in developing the Specific Plan to inform the public of what wastes could be disposed of in the sanitary sewer and what alternative disposal options are available for other wastes. The program should include information regarding alternative household chemicals that are the least environmentally harmful.*
- 4.4.2-2(f) *A pretreatment program should be considered in developing the Specific Plan. The program would be designed to educate and regulate businesses regarding what may be discharged to the sanitary sewer.*

4.4 PUBLIC UTILITIES

4.4.2-2(g) *A hazardous waste collection program should be implemented by the Community Services District to provide readily available disposal options for residents within the project.*

4.4.2-2(h) ~~All the agricultural drains under the project site should be located and removed or abandoned in place, in accordance with direction from the RWQCB, to eliminate the potential for the drains to act as contamination conduits.~~ During construction for any project phase, all agricultural drains under the impacted project areas should be removed or abandoned in place to eliminate the potential for the drains to act as contamination conduits. All drains should be eliminated at project build-out. All plans for relocation or removal of agricultural drains should be approved by the RWQCB.

Impact

4.4.2-3 An inadequate wastewater sludge treatment and disposal system could adversely impact water resources and public health due to release of untreated wastewater solids to local surface waters.

The disposal of wastewater sludge on land is regulated by both State and Federal regulations. In addition, the storage of sludge in drying beds is also regulated by the State. The Federal regulations have been proposed but not finalized, while the State regulations are contained in Title 26, Division 23, Chapter 3, Sub-Chapter 15 of the California Code of Regulations. Improper storage and disposal of wastewater sludge may have adverse impacts on public health and on surface and ground waters. The micro-organisms in sludge could cause diseases and the heavy metal and trace organic contents could degrade water quality. Proper containment and limited access to the sludge would generally be sufficient to protect public health. ~~Land disposal of sludge creates the potential for metals and trace organic compounds to leach into and contaminate groundwater and nearby surface water.~~ Disposal of sludge in landfills also takes up valuable solid waste capacity.

Land disposal of sludge creates the potential for metals and trace organic compounds to leach into and contaminate groundwater and nearby surface water. A portion of the metals and trace organics within the sludge enters the public sewers from commercial and industrial establishments. Title 5, Division 6, of the San Joaquin County ordinance requires that an industrial waste discharge permit be issued by the County Public Works Department for such discharges.

Heavy metals and trace organics in sewage sludge could be **further** minimized by having an aggressive pretreatment program where the discharges into the sanitary sewer from commercial and industrial users are monitored and scrutinized. Household chemicals also contribute to heavy metals and organic content in wastewater.

If the project were developed with features to minimize the discharge of heavy metals and organic compounds to the sanitary sewer, the resulting wastewater sludge may be used for beneficial purposes and not pose risks to public health or water quality. The proposed Federal sludge regulation may be changed to encourage the

reuse of sludge for its beneficial qualities while protecting public health and the environment (Federal Register, 1990). One possible beneficial use for wastewater sludge is composting.

The applicant determined that an average of 20,058 pounds of dry sludge per day would be produced in the wastewater treatment plant at the ultimate design flow of 6.5 MGD (Trimark Communities, 1991c). These calculations appear to include adequate safety margins. The sludge would be dried at a sludge drying bed facility to a solids content of 50 percent and be disposed of at the Vasco Road Landfill, located approximately 15 miles from the project site. Alternative sludge disposal options include land spreading as a soil amendment, composting, and incineration. These alternatives are described in Appendix 10.9.

Mitigation Measures

- 4.4.2-3(a) *The applicant should investigate potential beneficial uses for the wastewater treatment sludge and thoroughly evaluate the feasibility of implementing one or more of these options in the Specific Plan.*
- 4.4.2-3(b) *If disposal of wastewater treatment sludge at the Vasco Road landfill were one of the options identified during the evaluation, ~~an executed contract with the landfill should be provided~~ **this alternative should be included and discussed** in the Specific Plan. **The feasibility and necessary permit requirements should be discussed in detail.***
- 4.4.2-3(c) *Sludge drying beds should be designed and constructed to meet the requirements in Title 26, Division 23, Chapter 3, Subchapter 15 of the California Code of Regulations.*
- 4.4.2-3(d) *A pretreatment program designed to regulate non-domestic wastewater discharges into the sanitary sewer should be considered in developing the Specific Plan.*

Impact

- 4.4.2-4 **An uncontrolled release of hazardous materials would be possible with wastewater treatment practices and could impact water resources and public health.**

Wastewater treatment activities generally include the use of hazardous materials such as chlorine, typically in the form of hypochlorite or chlorine gas. Additional chemicals may include sodium bisulfite or sulfur dioxide gas. Two types of potential impacts would be associated with the uncontrolled release of hazardous materials or wastes potentially transported to, used at, and stored at the wastewater treatment plant: airborne releases and spills. These impacts and associated hazardous materials are described in Appendix 10.7.

Mitigation Measures

- 4.4.2-4(a) *A **preliminary** Hazardous Materials Business Plan should be developed to address material stored, used, and generated by the proposed wastewater treatment plant. This Plan should be included as part of the project's Specific Plan.*
- 4.4.2-4(b) *Prior to design of the wastewater treatment plant, chemicals for wastewater treatment operations should be carefully selected to minimize the potential for risk of upset. The selected chemicals should be identified in the Specific Plan. The chemical handling and storage facilities in the wastewater treatment plant should be designed to provide secondary containment and safety features to minimize and effectively mitigate accidental releases.*

4.4 PUBLIC UTILITIES

4.4.3 STORM DRAINAGE

Setting

The topography across the project site is gently sloping with the exception of a small portion at the southwest corner (Figure 3.5). The project site is used almost entirely for agriculture and pastureland. The only impervious cover on the site includes roads, pavement, and the acreage covered by buildings and houses. Local drainage on the project site is largely dictated by an extensive system of ditches and agricultural drains constructed around the existing farmland. Mountain House Creek, the only remaining natural drainage channel on the site, drains a watershed of approximately 15 square miles, most of which is located west of the project area in Alameda County; the watershed drains the area toward Old River by gravity (Figure 4.4-4).

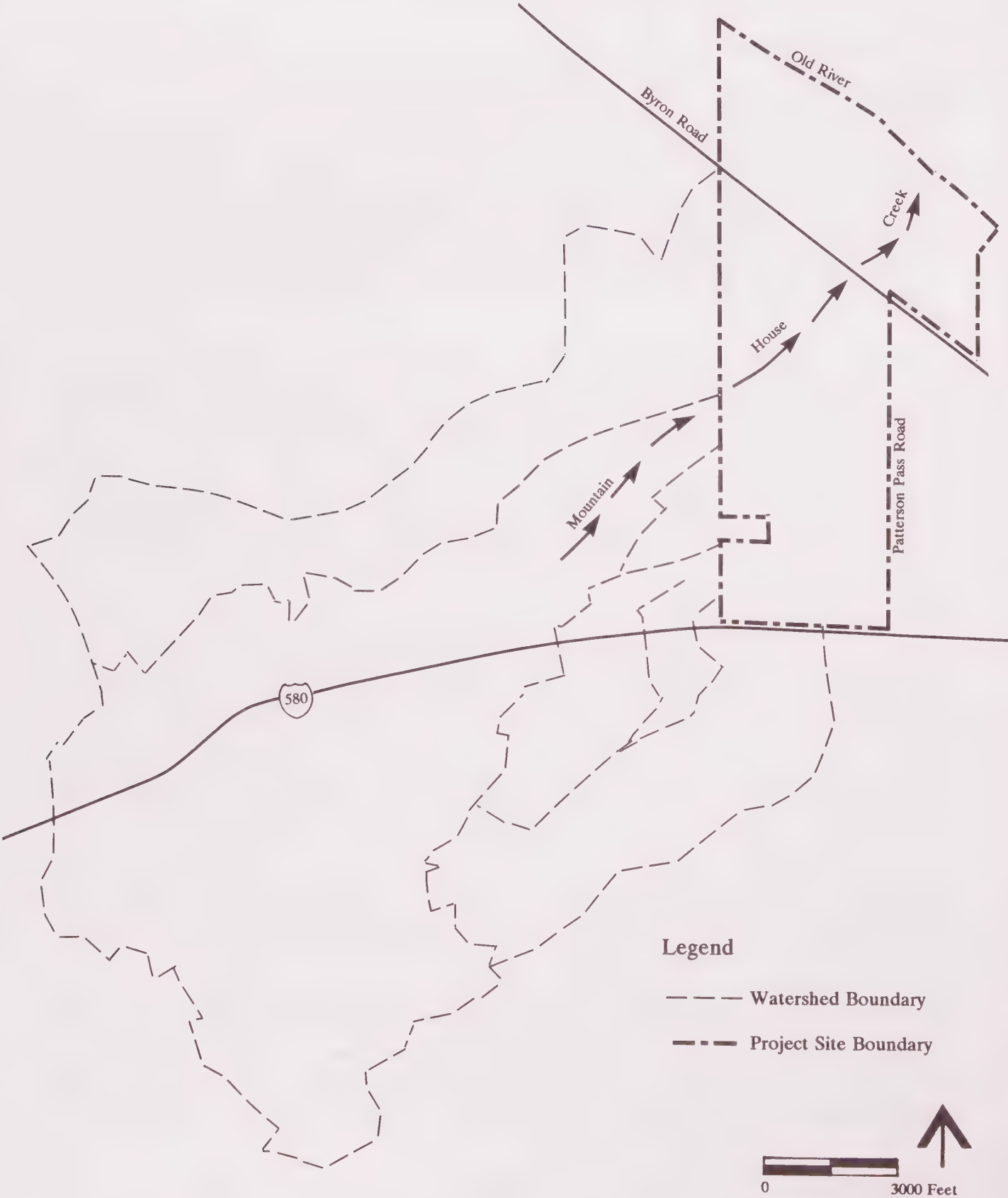
Dry Creek was a historic natural channel on the site with a 6.8-square mile watershed; the Creek has been altered drastically north of Byron-Bethany Road. Currently, water in this watershed flows in drainage ditches that carry the water to Old River. Local farmers pump water from the ditches adjacent to Old River over the levee into the River. Five additional watersheds drain onto the southern half of the project site (Figure 4.4-4). The flood pathways are not well defined on the project site, but consist of a combination of farm ditches and local ponding. BBID owns and operates surface and subsurface drains (e.g., agricultural tile drains) in the central and southern portions of the project site (Figure 4.4-2). Although these drains are intended to carry agricultural runoff and tile drain water, they also serve to convey storm water in the wet season. BBID drains are described in detail in Section 4.4.1 of this DEIR.

The area within a 2,000-foot band along Old River is subject to flooding during a 100-year flood event according to the latest Flood Insurance Rate Map issued by the Federal Emergency Management Agency (1988). The level, flow rate, and direction of the water in Old River is significantly influenced by the pumping operations associated with the Delta-Mendota Canal and California Aqueduct, tides, and runoff. In 1982, the low-lying area within the 100-year flood zone was flooded due to a high-intensity storm that resulted in high flows in Mountain House Creek. Flow rates in Mountain House Creek have not been measured regularly. Hydrology and water quality issues are further discussed in Section 4.7 of this DEIR.

Impacts and Mitigation Measures

Significant impacts related to storm drainage include, 1) potential flooding due to an inadequate storm water drainage system, 2) water quality degradation due to an inadequate storm drainage system, 3) destruction of riparian habitat to accommodate storm water runoff, and 4) infringement on utility easements.

An extensive storm water runoff drainage system would have to be built to serve the project site. As the project is proposed to be constructed in phases, the storm drainage system would be expanded to serve the newly developed area. Storm water runoff from the project site would ultimately be discharged to Old River. The storm drainage system would consist of catch basins, underground piping, open drainage channels, and detention basins. The applicant has calculated storm water flow rates using the Army Corp of Engineers



4.4 PUBLIC UTILITIES

HEC-1 model, assuming an SCS Type I rainfall distribution for a 24-hour storm with a 100-year return frequency. The proposed major storm drain trunk lines and detention basins for the project were sized using the HEC-1 computer model. The existing agricultural ditches and tile drains would be abandoned as areas become developed.

Impact

4.4.3-1 The storm water discharges into Mountain House Creek and Old River could contain pollutants that may adversely impact the beneficial uses of Old River.

Storm water from urban areas contains numerous contaminants that may adversely affect receiving waterways. Common pollutants in urban runoff include sediments, nutrients, bacteria, oil and grease, trace metals (particularly lead, cadmium, copper, and zinc), trace toxic organics, and chlorides or salts (Schueler, 1987). In addition, the degradation of organic materials by naturally occurring bacteria in the receiving water can deplete the water of dissolved oxygen necessary for aquatic life.

It is difficult to quantitatively project the impacts of pollutants in urban runoff from the project site on the water quality in Old River or on the operations of the Delta-Mendota Canal. Limited water quality data are available from Old River and from the head of the Delta-Mendota Canal. Detailed nutrient analyses have not been performed for Old River water near the project site. Also, the existing nutrient load from storm water and agricultural runoff into Old River from the existing farms and dairies on the project site are unknown. Other substances expected in urban runoff such as bacteria, oil and grease, and organic compounds, have not been monitored in Old River. Limited heavy metal data have been collected from Old River approximately 12 miles north of the project site adjacent to Palm Tract. Although these data are not entirely representative of the water in Old River passing the project site or the water being pumped into the Delta-Mendota Canal, they provide an indication of the heavy metal concentrations in the water in the South Delta and in the water that is pumped into the large State and Federal water projects (Appendix 10.10, Table 10.10-1).

The water quality data from national and local studies and Old River are highly variable and indicate that, in general, the concentrations of heavy metals in urban runoff are higher but of the same order of magnitude as the water quality in Old River. Although the concentrations of trace metals in storm water from the project site may not be significantly higher, the mass loading of heavy metals into Old River would probably increase with the proposed development due to higher flow rates and slightly higher concentrations. Noticeable impacts would likely involve petroleum residues washed into the storm drain system, illegal waste or wastewater discharges into the system, or accidental spills. Accidental spills of petroleum and other chemicals on roadways or in the marina in the project site are inevitable. A spill of sufficient magnitude to impact the Delta-Mendota Canal is possible.

The Water Quality Act of 1987 amended the Federal Clean Water Act by directing the U.S. Environmental Protection Agency (EPA) to regulate storm water discharges from urban areas or from areas associated with

industrial activities into surface waters. The EPA regulations (finalized 16 November 1990) specify application and permit requirements for such storm water discharges. In California, these regulations are being implemented by the RWQCB. The current regulations require all communities that have a population greater than 100,000 people and contain industrial operations to apply for a National Pollutant Discharge Elimination Permit (NPDES) for storm water discharges. Storm water regulations would likely be extended to communities with lower populations in the near future (Taylor, 1991).

Although the project, as proposed, would have a population of under 100,000 people, the storm water drainage system should be designed and built with consideration for potential future storm water regulations. For storm water discharge from an urban area, the regulations require a municipality to submit a two part application to the appropriate RWQCB. The application would include 1) information on water quality data, 2) a description of the existing storm water collection system, 3) identification of the legal authority to control discharges, 4) an existing storm water management program, and 5) financial resources devoted to implement the storm water control program. The NPDES permit issued to a municipality would include requirements to effectively prohibit non-storm water discharges from entering the storm sewers and controls to reduce the discharge of pollutants to storm water to the maximum extent practicable.

Construction activities involving the disturbance of more than five acres of land are considered an industrial activity and are regulated under the new storm water regulations. Frequently, a large amount of sediment from construction sites is flushed into creeks, rivers, and other water bodies during rain. Sediment loading into natural water bodies adversely impacts existing fish and wildlife and causes siltation problems. A draft NPDES permit has been proposed by the EPA for storm water discharges associated with construction. For the project, a Notice of Intent would have to be submitted to the RWQCB, Central Valley Region, at least 30 days prior to the commencement of construction according to the draft NPDES permit language. The draft permit contains a prohibition on discharges of wastewater other than storm water and a requirement to prepare and implement a pollution prevention plan. The pollution prevention plan should include descriptions of erosion and sedimentation control, structural practices for diverting flows from exposed soils, and measures for minimizing pollutant discharges after construction has been completed.

Mitigation Measures

- 4.4.3-1(a) *The project applicant must submit an NPDES permit application for storm water discharge associated with an industrial activity to the RWQCB, Central Valley Region, at least 30 days prior to the commencement of construction and comply with all requirements specified in the NPDES permit. This submittal should be addressed in the Specific Plan.*
- 4.4.3-1(b) *The storm water collection system should be designed and constructed to prevent erosion and minimize pollutant loading. This system should be described in the Specific Plan.*
- 4.4.3-1(c) *The Community Services District for the proposed project should prepare and implement a Best Management Plan to: 1) prevent non-storm water from entering the storm water collection*

4.4 PUBLIC UTILITIES

system; 2) minimize the discharge of pollutants into the storm water collection system, and, 3) prepare for prompt and effective response to accidental spills into the storm drain system. This plan should be developed as part of the project's Specific Plan.

- 4.4.3-1(d) *An emergency response plan should be prepared for the project to provide immediate and effective containment and cleanup response to accidental spills and illegal dumping of materials into the storm drain system. The emergency response plan should be approved by the San Joaquin County Office of Emergency Services prior to project construction.*

Impact

- 4.4.3-2 The modifications proposed for Mountain House Creek could damage the existing riparian habitat or prevent the establishment of a healthy riparian habitat.**

The applicant has proposed to widen and deepen the lower sections of Mountain House Creek to eliminate flooding along the creek and to accommodate the increased flow rates due to development. The Creek has been modified from its natural configuration over the years largely due to farming activities. The detailed design has not been completed. Any modification to natural channels must receive a Streambed Alteration Agreement pursuant to Section 1603 of the Fish and Game Code from the California Department of Fish and Game (CDFG). One of the goals of this process is to ensure that no net loss of riparian habitat occurs as a result of any stream modification. The applicant must submit an application and fee to the CDFG. A warden would assess the existing conditions of the creek and formulate mitigation measures. After evaluation, a signed agreement including all the mitigation measures would be formalized between the CDFG and the project proponent regarding how the stream would be modified. CDFG would monitor the construction to ensure that the mitigation measures were being followed.

Mitigation Measures

- 4.4.3-2(a) *The applicant must apply for and comply with a Streambed Alteration Agreement from the California Department of Fish and Game (CDFG).*
- 4.4.3-2(b) *~~Detailed~~ Streambed modification design and riparian vegetation proposals should be prepared at the Specific Plan stage and should be subject to approval by the County and CDFG.*

Impact

- 4.4.3-3 The volume and rate of runoff from the Mountain House New Town could cause excessive erosion and siltation of detention ponds, creeks, drainage channels, and Old River.**

The applicant has proposed to use detention basins (also referred to as ponds) as part of storm water collection system to reduce peak flows downstream and to catch the "first flush" runoff that generally carries the highest concentration of pollutants from approximately the first one-half inch of rain. The design of the basins has not been determined. The applicant has preliminarily sized the basins to contain the first one-half

inch of rain from the respective tributary areas of the basins. The capacity of the detention basins ranges from 10 acre-feet to 160 acre-feet. If the depths of the ponds are assumed to be six feet deep at full capacity, then their surface area would range from 1.7 acres to as much as 26.7 acres for some individual basins.

Generally, the detention basins would be empty through much of the year. They could be designed to have upper and lower stages where only the lower stage would have water throughout the year. The upper stage could be maintained as grassy open space or playing fields and would only be flooded during storms. In some designs, the lower stage could be maintained as a wetland pond. Water is drained from the pond through a submerged perforated pipe. The maintenance of healthy wetland would require close attention. An alternative design consists of two connected, lined basins, one significantly smaller than the other. Both basins would be dry during most of the year. The first flush, containing the storm water containing the greatest amount of contaminants, would flow into the smaller basin for treatment. Once the smaller basin fills, the incoming storm water would flow into the larger basin for flood control purposes. Water would be drained from the smaller basin by drains buried underneath the bottom of the pond thus preventing floating materials and sediments from being discharged into the natural water way (see Appendix 10.10 for illustrations of various types of detention basins).

Detention basins are effective in removing particulate pollutants from storm water and in slowing the peak runoff rate in downstream pipes and channels. This system reduces erosion of earthen channels and allows smaller pipes to be installed. Heavy metals, nutrients, and organic matter that absorb onto sediments (i.e., particulates) can also be removed from the runoff, thus reducing contamination of waterways and wildlife habitat. For the detention basins to effectively remove particulates, they must be sized to detain runoff long enough for particulates to settle.

The applicant has proposed to place detention basins in school areas, parks, open space areas, residential, and light industrial areas. The proposed ponds may be located near underground utilities or overhead electrical transmission line easements. The detention basins cannot infringe on the easements without the approval of the owner of the easement. Impacts and mitigation measures for development in utility easements are included in Section 4.4.4 on gas and electricity. In addition, detention basins may not be feasible in areas where the groundwater is shallower than the bottom of the basin. Groundwater levels in the project area are not well defined.

Mitigation Measures

- 4.4.3-3(a) *The operating budget of the Community Services District should be guaranteed to be sufficient for all maintenance functions necessary to operate the storm water collection system as intended. The budget should be addressed in the Specific Plan.*
- 4.4.3-3(b) **The performance standards and design features of the inlets to detention ponds ~~must be designed to reduce the velocity of the water in the ponds. The inlet design~~ should be included in the Specific Plan. The design should allow for reduction in the velocity of the incoming water.**

4.4 PUBLIC UTILITIES

- 4.4.3-3(c) *If two-stage detention ponds were used, the inflow channel for the upper stage (usually dry) should be constructed to prevent erosion, which may include a concrete low-flow channel or riprap, and should terminate at the edge of the lower stage (always wet). The design features and performance standards to prevent erosion should be provided in the Specific Plan.*
- 4.4.3-3(d) *Periodic removal of sediments from detention ponds should occur to restore the capacities and to minimize resuspension of sediments. Pond maintenance objectives, activities, and approximate frequencies should be described in the Specific Plan; a detailed description of maintenance activities should be incorporated into an Operations and Maintenance Manual for the storm water collection system.*
- 4.4.3-3(e) *If grading or construction activities were to occur during the winter months, local drainage and temporary detention ponds should be provided to trap sediment in the runoff prior to discharge to creeks, ditches, or Old River. These provisions should be addressed in the Specific Plan.*

Impact

- 4.4.3-4 **The accumulation of floating debris and petroleum residual in detention ponds could create a nuisance condition (e.g., odors, mosquito infestation, and excessive algae growth) and cause adverse aesthetic effects.**

Detention ponds provide no treatment for floating pollutants, such as residual fuel and litter from urban areas. These floating pollutants would build up in the detention basins unless they are manually removed. Detention basins also provide no treatment for dissolved organic and inorganic pollutants.

Detention basins require fairly intensive routine maintenance. Maintenance activities include inspections; landscape maintenance; removal of weeds and woody plants from the surrounding area and spill ways; erosion and bank repairs; and nuisance abatement. Without a good maintenance program, nuisance conditions, such as odor problems, mosquito infestation, floating debris and fuel, and excessive algae growth in the water would be common. Long-term maintenance activities include periodic sediment removal and occasional structural and plumbing repairs.

Mitigation Measures

- 4.4.3-4(a) *Surface barriers near the inlets to detention ponds should be considered to contain floating debris and residual hydrocarbon within a small area of the basins to allow for easier cleanup. The ~~pond designs~~ performance standards and design features to achieve containment should be included in the Specific Plan.*
- 4.4.3-4(b) *Landscaping in and around detention ponds should be maintained free from litter and in healthy condition. To the extent feasible, native drought tolerant plants should be used. Landscaping plans and maintenance activities should be described in the Specific Plan.*

- 4.4.3-4(c) *Equipment for removing floating debris and cleaning up petroleum products from the basins should always be available within the project site. Description of the equipment and other necessary materials should be provided in the Specific Plan.*
- 4.4.3-4(d) *Frequent inspection of detention ponds (e.g., daily during rain storms, weekly during dry periods) should be conducted and the findings recorded. Inspection ~~schedules~~ **objectives, types of activities, approximate frequencies of inspections, and recordkeeping plans** should be included in the Specific Plan; **a detailed description of inspection activities should be incorporated into an Operations and Maintenance Manual for the storm water collection system.***
- 4.4.3-4(e) *Adequate access should be ensured for maintenance of all detention basins. Pond layouts should be provided in the Specific Plan.*

Impact

- 4.4.3-5 **Construction of the proposed project in phases could interfere with the operations of BBID's water distribution canals, agricultural tile drains, and surface drainage channels.**

Agricultural activities would presumably continue on the undeveloped portions of the project site during the first three phases. The applicant proposes to maintain separate drainage systems for urban and agricultural runoff as the project proceeds. Existing drains on farmlands that are developed would be abandoned as the land is developed. Farm drains would be rerouted around adjacent new urban areas so that farm drainage is not impeded.

Mitigation Measure

- 4.4.3-5 *The development should be designed and constructed such that BBID operations are not interrupted. The Specific Plan should address how this is to be accomplished.*

4.4.4 GAS AND ELECTRICITY

Setting

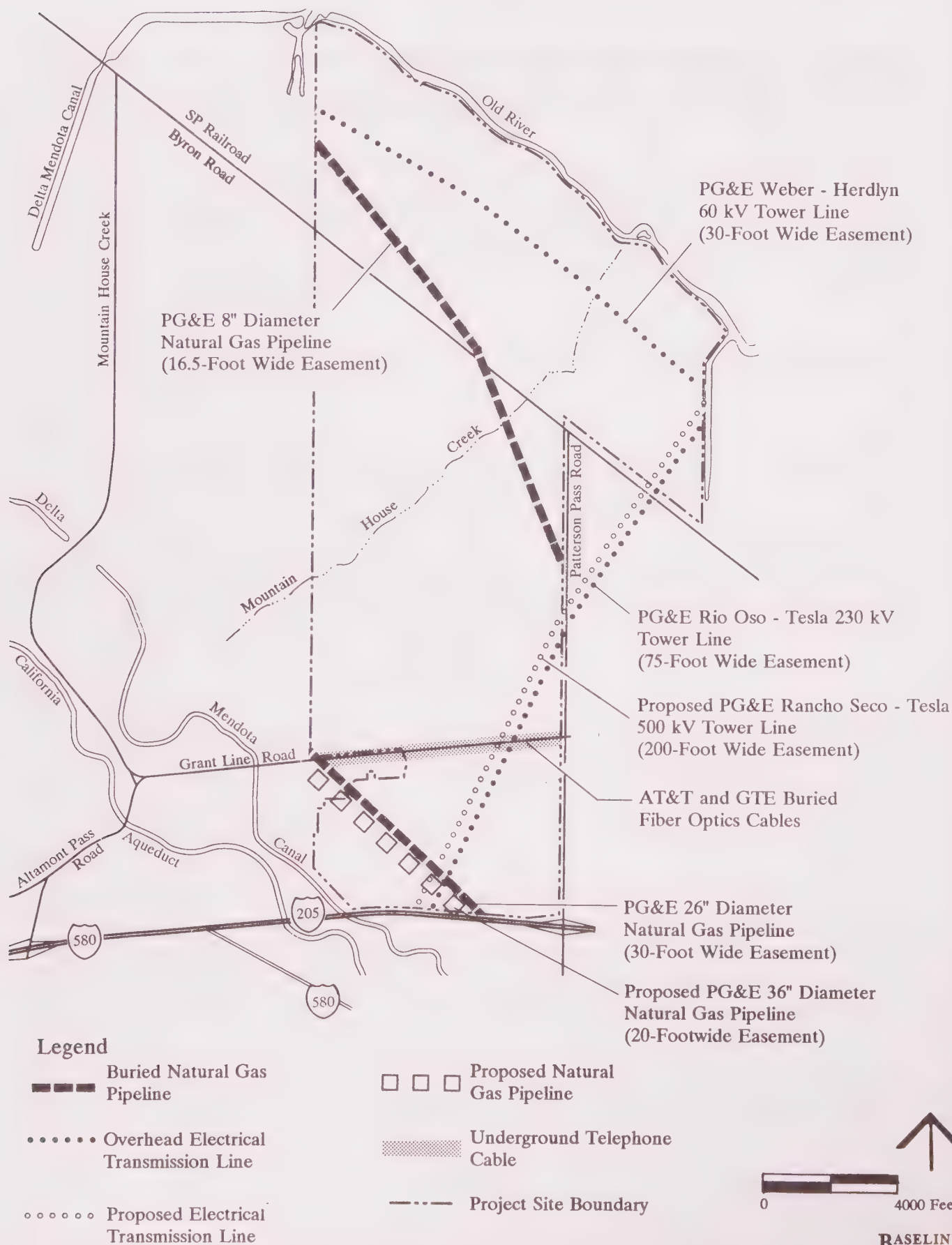
Pacific Gas and Electric Company (PG&E) currently supplies electricity and natural gas service to the area. Herdlyn Substation, located near the intersection of Herdlyn Road and Byron Road approximately two miles northwest of the project boundary, is the primary electrical feed to customers within the project site. Existing power demand within the project site and PG&E's service capacities for the area are considered proprietary information and therefore are unavailable. The major existing on-site users of electricity and natural gas are the approximately 40 residences and two dairies.

Two existing and one proposed electrical transmission line easements traverse the project site (Figure 4.4-5). The Weber-Herdlyn 60 kilovolt (kV) overhead transmission line with a 30-foot wide easement runs northwest

to southeast across the northern portion of the project site, parallel to Old River. The Rio Oso-Tesla 230 kV overhead transmission line with a 75-foot wide easement runs southwest to northeast across the southeast portions of the project site and the site's northeast corner. The proposed Rancho Seco-Tesla 500 kV

EXISTING MAJOR UTILITY EASEMENTS

Figure 4.4-5



overhead transmission line is adjacent to the Rio Oso-Tesla line and has an easement of 200 feet. **Although the Rancho Seco-Tesla line may not be constructed, PG&E has no plans for relinquishing this right-of-way.** In addition, two natural gas pipelines owned by PG&E cross the project site (Figure 4.4-5). The Stan Pac pipeline, 26 inches in diameter with a 30 foot-wide easement, runs across the southern portion of the project site. **The Stan Pac line is now owned by PG&E and designated Line No. 2. The PGT-PG&E Pipeline Expansion Project is scheduled for construction in 1993. A new 36-inch diameter natural gas pipeline will be constructed parallel to PG&E Line No. 2. The existing 30-foot wide easement would be expanded to 50 feet (Sullivan, 1992).** An eight-inch diameter natural gas pipeline with a 16.5-foot wide easement also runs from the northwest to the southeast crossing Byron Road and Patterson Pass Road.

Impacts and Mitigation Measures

Significant adverse impacts are considered to be those that would result in violating development restrictions associated with existing natural gas and electrical line easements across the project site or result in the use of significant amounts of non-renewable energy resources.

PG&E has indicated that it would be able to service the project site (Rubio, 1991a). PG&E would need to substantially increase distribution capacities in the area. New facilities, including a substation and transmission lines, would likely be required. A typical substation would require an approximately five-acre site with street access. New transmission and distribution lines would also require easements. Existing above-ground distribution lines ~~would~~ **may** have to be relocated underground. At this point, PG&E is unable to supply specific information regarding new and expanded facilities. The new and upgraded facilities to supply Mountain House with natural gas and electricity would be financed ~~by PG&E~~ **in accordance with extension rules on file with the California Public Utilities Commission.** Contribution in Aid of Construction tax of ~~28~~ **35 percent for gas facilities and 34 percent for electrical facilities** would have to be paid by the developer for all construction (~~Rubio, 1991b~~ **Sullivan, 1992**).

Impact

4.4.4-1 The proposed land use plan appears to violate PG&E restrictions for uses within electrical transmission line and natural gas pipeline easements and does not provide adequate corridors for planned utility easements.

The proposed land use plan does not provide sufficient undeveloped corridors for complying with easement restrictions associated with the overhead electrical transmission lines. The project's open space corridor proposed for the alignments of the Rio Oso-Tesla and Rancho Seco-Tesla transmission lines does not extend along the whole length of the easements through the project site and does not appear to be sufficiently wide over the length of the easement. The applicant has proposed to relocate and/or underground the Weber-Herdlyn 60 kV transmission line so that the need for an open space corridor would not be needed. The eight-inch diameter natural gas pipeline currently passes under parcels proposed for schools, residential, commercial, and industrial uses. The applicant has proposed to relocate the eight-inch gas pipeline along

the railroad tracks along Byron Road and Patterson Pass Road. An open space corridor has been proposed for the 26-inch Stan Pac gas pipeline.

To relocate and/or underground a PG&E electrical transmission line or natural gas pipeline, the applicant must formally present the proposal to PG&E. **Relocation may only be performed between April and September each year to ensure a reliable gas supply during the winter months.** In general, PG&E would approve of such proposals if the proponent is willing to finance the work and the new alignments are owned by the proponent so that the new

easements are guaranteed at no cost to PG&E. The work to relocate or underground the utilities would be done by PG&E and could require more than one year to complete (Rubio, 1991c).

PG&E limits development on easements associated with electrical transmission lines and natural gas pipelines. For electrical transmission lines easements, PG&E may permit certain uses within the easement as long as the uses do not limit access to the towers or wires, or damage any transmission facilities. In general, buildings, swimming pools, wells, and other structures are not permitted. PG&E encourages green belts along their easements as long as access to the towers is maintained and any introduced or existing vegetation does not exceed 15 feet in height at maturity. Some improvements, including ~~drainage basins~~, recreation areas, parking areas, and **restricted** landscaping, may be allowed **in electrical easements** pending PG&E review of the detailed proposal. Development on easements associated with natural gas pipelines cannot disturb the soil cover over the pipelines **or include landscaping with trees or deep-rooted vegetation**. This precludes all development which requires excavation within the easements. **PG&E is also concerned with the movement of heavy equipment over Line No. 2 (Stan Pac) gas pipeline.**

Mitigation Measures

- 4.4.4-1(a) *The applicant should formally apply to PG&E to relocate and underground the Weber-Herdlyn 60 kV electrical transmission line. A preliminary response and cost estimate from PG&E should be secured and documented in the Specific Plan.*
- 4.4.4-1(b) *The applicant should formally apply to PG&E to relocate the eight-inch natural gas pipeline. A preliminary response and cost estimate from PG&E should be secured and documented in the Specific Plan.*
- 4.4.4-1(c) *An adequate **open space** corridor or appropriate land use plan which meets PG&E approval should be provided for the Rio Oso-Tesla and proposed Rancho Seco-Tesla transmission line corridors (see Section 4.12, Public Health and Safety section of this DEIR). PG&E's approval should be secured and documented in the Specific Plan.*
- 4.4.4-1(d) *Development within electrical overhead transmission easements must not restrict access to the towers or interfere with the tower footings or wires, and must receive prior approval from PG&E. Development in easements associated with buried pipelines should not disturb soil cover over the pipelines, and must receive prior approval from PG&E or other owners of easements.*
- 4.4.4-1(e) **The applicant should submit construction plans to PG&E for review. In particular, the proposed land uses in PG&E easements and movement of heavy machinery over the Line No. 2 gas pipeline should be addressed. PG&E's approval should be secured and documented in the Specific Plan.**

Impact

- 4.4.4-2 **The project would have a significant energy demand and would contribute to the depletion of non-renewable resources and the demand for environmentally-detrimental renewable resources such as hydroelectric power.**

A conservative estimate of electricity and natural gas consumption for one residence in the Central Valley is 8,000 kilowatt-hours (kwh) per year and 500 therms per year, respectively (Pennino, 1991). Using these figures, 128 million kwh of electricity and 8 million therms of natural gas would be needed for the residences

within the project site each year after full buildout. If the energy demand for the project were converted to an equivalent volume of automobile fuel, electricity demand for the project would be equivalent to 3.8 million gallons of automobile fuel and the natural gas demand would be equivalent to 6.4 million gallons of automobile fuel per year.

Industrial, commercial, street lighting, and construction-related energy demand are difficult to predict but would likely exceed the residential demand. The additional energy demand of the project would create a significant impact on non-renewable energy resources such as fuel oil, coal, and natural gas, and would increase pressure to develop environmentally-destructive renewable resources such as hydroelectric power.

A significant portion of the total energy demand associated with the project would be related to transportation. In California, transportation accounts for approximately 41 percent of total energy use and 75 percent all petroleum use (California Energy Commission, 1990). Fuel for cars and light trucks represents 55 percent of total transportation use. If commercial centers were located within a convenient walking distance (e.g., one quarter to one-half mile) from residences, dependency on the private automobile would be reduced. According to the proposed project, some residents would be further than one-half mile from the nearest retail center.

Given the hot and sunny climate in San Joaquin County, the use of solar energy to decrease the demand for electricity and natural gas is a plausible alternative. The Solar Rights Act of 1978 states that: 1) local planning and building ordinances should not prohibit or unreasonably prohibit the use of solar energy systems, 2) tentative subdivision maps should be reviewed to provide, to the extent feasible, opportunities for future use of natural heating or cooling, and, 3) local governments are allowed to adopt an ordinance requiring easements for solar access as a condition of subdivision map approval (California Energy Commission, 1979). A second legislation, the Solar Shade Control Act of 1978, prohibits the placement of vegetation in locations that would shade a solar collector on another person's property.

The Revised Draft San Joaquin County General Plan 2010 contains energy conservation objectives and policies. The stated objectives are to minimize the consumption of nonrenewable resources and to encourage the use of alternative renewable energy sources (San Joaquin County, 1991a).

Mitigation Measures

- 4.4.4-2(a) *Streets in residential areas should be aligned ~~east to west to the maximum extent possible to produce~~ **maximize** the ~~largest~~ number of ~~lots~~ **houses** with southern exposures ~~and~~ to facilitate the use of solar energy. Lots along these streets should be of an adequate width to promote south-facing orientation of units and maximum south-facing roof areas for solar collectors. Street, lot, and residential unit design to promote the use of solar energy should be addressed in the Specific Plan.*

4.4 PUBLIC UTILITIES

- 4.4.4-2(b) ~~The land use plan should provide dedicated easements for solar access so that solar collectors on any building would not be shaded by adjacent buildings. Such easements should be addressed in the Specific Plan.~~ **The Specific Plan should state how conformance with the Solar Rights Act of 1987 and Solar Shade Control Act of 1987 would be achieved. Details on how the acts would be implemented should be addressed during the Tentative Map phase.**
- 4.4.4-2(c) *The Specific Plan should assess the feasibility of incorporating solar water heating systems for residential, commercial, and industrial buildings.*
- 4.4.4-2(d) *Residences with common walls should be incorporated into the project to the extent practicable to minimize heat loss from units. Inclusion of such units should be addressed in the Specific Plan.*
- 4.4.4-2(e) *Shade trees should be provided on the west side of buildings to reduce cooling demands during the summer and to provide windbreaks during cooler months. Landscaping standards should be established in the Specific Plan.*
- 4.4.4-2(f) *Shade trees should be provided in parking lots that would not block winter sunlight from reaching nearby buildings. At least 70 percent of the parking stalls should be shaded between 10 a.m. and 2 p.m. Such shading would reduce the use of air conditioning in automobiles and heat buildup associated with asphalt. Landscaping standards should be established in the Specific Plan.*
- 4.4.4-2(g) *Landscaping along roads should be incorporated into the project design to minimize heat buildup associated with asphalt. Landscaping standards should be established in the Specific Plan.*
- 4.4.4-2(h) **The new town should maximize the use of alternative energy and ensure that the most energy efficient equipment and designs are used. The Specific Plan should assess the feasibility of using alternative sources of energy, including wind power for the new town. The Specific Plan should also state how energy efficiency will be ensured for the proposed project.**

4.4.5 TELEPHONE

Setting

Telephone service would be provided by Pacific Bell. Approximately 65 percent of the existing telephone capacity in the project site is being used. Two main feeder plants currently provide telephone service to the project site. The larger feeder plant runs underground along Byron Road from the east carrying 600 pairs of cables (Figure 4.4-6). The cables branch into suspended distribution cables in the north and northwest

EXISTING TELEPHONE FACILITIES

Figure 4.4-6



Legend

- Main Feeder Plant
- Distribution Cables
- Underground Fiber Optic Cables
- Switch Stations with Easement
- Project Site Boundary



BASELINE

4.4 PUBLIC UTILITIES

directions from the feeder plant near the Alameda-San Joaquin County line, and the feeder plant continues underground westward under Kelso Road. The second feeder plant carrying 200 pairs of cables runs underground along Van Sostan Road from the east to Patterson Pass Road. Above ground distribution lines originate at the intersection of Van Sostan and Patterson Pass Roads and run north and south along

4.4 PUBLIC UTILITIES

Patterson Pass Road. The distribution lines further branch to the east and west along Grant Line Road. The feeder plants and distribution lines are within public utility easements.

Three switch locations exist on or adjacent to the project site. Switch locations, also known as pair gain cabinets/electronics, are points in the feeder plant where distribution lines branch off. Switches are located at the intersection of Mountain House and Kelso roads, Byron and Kelso roads, and Van Sostan and Patterson Pass roads. Rights-of-way, measuring approximately 20 feet by 20 feet each, have been secured for all the switch locations. Development in easements is prohibited (Corbridge, 1991a).

Two buried fiber optic lines, one owned by American Telephone and Telegraph Company and the other owned by GTE, run along Grant Line Road from east to west. The fiber cables are within the public utility easement.

Impacts and Mitigation Measures

No significant adverse environmental impact has been identified in association with providing telephone service to the proposed project, although extensive telephone facilities reinforcement would be necessary. Pacific Bell is concerned with obtaining detailed project designs early enough to allow ample time to plan and construct new or expanded telephone facilities. To provide telephone service to the project site, new feeder plants and other facilities would be required, even for Phase I. The Integrated Technology Planning (ITP) group within Pacific Bell is responsible for planning telephone service for the project site. The first meeting of the ITP occurred in March 1991 and planning will continue as details on the project become available. Extensive underground conduits would be required to house all telephone wires. Pacific Bell estimates that a total of 21,000 cable pairs would be required at full build-out (4,000 pairs for Phase I, 6,000 pairs for Phase II, 6,000 pairs for Phase III, and 5,000 pairs for Phase IV). The type of technology that would be used to service the project site would be determined by an economic and operations analysis. A central office within the project site may be required for housing switching equipment (Corbridge, 1991a). The applicant must secure easements for all necessary telephone conduits and facilities, including a central office if needed, for Pacific Bell.

Financial obligations for the telephone service expansion have to be assigned. The developer and Pacific Bell would negotiate an agreement which assigns construction and financial responsibilities for new facilities. A Contribution in Aid of Construction tax of 28 percent would have to be paid by the developer for all construction regardless of which party does the actual construction. Pacific Bell would charge the developer according to tariffs in the California Public Utility Commission Tariff Regulations Applicable to Engineering (Corbridge, 1991b). An example of a tariff is for conversion of aerial wires to underground conduits. The developer would be required to pay for relocation and/or underground conversion of existing feeder plants and distribution lines.

4.5 CULTURAL RESOURCES

SETTING

Introduction

Archaeological, ethnographic and historical overviews have been prepared for the entire project site (Baker and Shoup, 1991). The result of the overviews are contained in a technical report, which can be reviewed at the San Joaquin County Community Development Department. This section summarizes the technical report.

The cultural resources were identified through archival research at the California Archaeological Inventory, Stanislaus State University; the archives of the University of California Archaeological Survey at the Lowie Museum, University of California, Berkeley; and at the Engineering, Map, and Bancroft Libraries at the University of California, Berkeley. Reports were also obtained from private sources who had been involved in prior environmental work in the area. In addition, the National Register of Historic Places and the California Inventory of Historic Resources were consulted.

For this DEIR, an intensive archaeological reconnaissance of approximately 770 acres of the project site was conducted south of Grant Line Road, as well as of two parcels (each about 55 acres in size) north of the Southern Pacific (SP) railroad tracks and west of Wicklund Road (Figure 4.5-1) (Baker and Shoup, 1991). In 1989 and 1990 an archaeological study was conducted for portions of the project site north of Grant Line Road (except for the two 55-acre parcels mentioned above) (Archeo-Tec, 1989 and 1990).

A preliminary inventory of standing historic (over 50 years of age) structures within the entire project site has also been conducted for this DEIR. No architectural evaluations have been prepared during this phase of the project.

Cultural Background

During prehistoric times, the project site and environs were probably part of the ethnographic territory of the Cholbon tribelet of the Northern Valley Yokuts (Bennyhoff, 1977). The Northern Valley Yokuts were a hunting and gathering people who lived on the natural bounty of a rich, well-watered Central Valley ecosystem (Wallace, 1978; Kroeber, 1976). The tribelet center of the Cholbon group is thought to have been on the south bank of Tom Paine Slough, northwest of the town of Banta, east of Tracy. The tribelet territory apparently extended westward along Old River to just west of Bethany (Bennyhoff, 1977).

When Spanish-led exploring parties arrived in the area during the late 18th and early 19th centuries, they found a large Yokuts village not far from the project site. This place became known as "El Pescadero" or "fishing place," because the Indians lived primarily by fishing in Old River (Gudde, 1969; Beck and Haase, 1974; Hoover *et al.*, 1966).

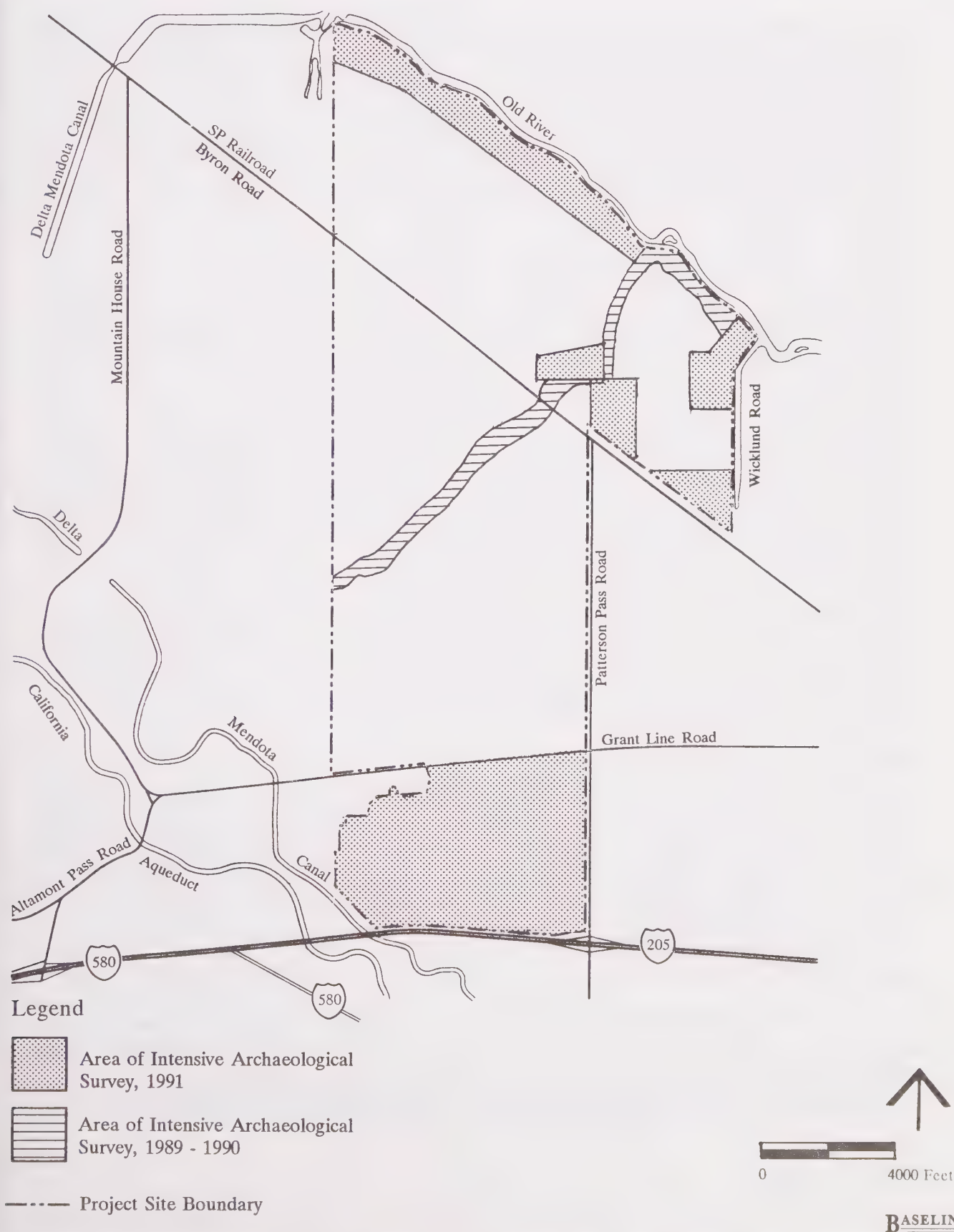
The first European contact with the project site may have been during the 1776 expedition of Juan Bautista de Anza from San Francisco Bay across Contra Costa County to the Sacramento-San Joaquin Delta. At least one author believes that this expedition extended into San Joaquin County,

following Old River to the Bethany area and then south to Patterson Pass (Bolton, 1930). The Spanish, however, never settled this region.

During the active period of Mexican rancho development during the early 1840s, El Pescadero Rancho was created but was never settled due to Indian attacks. Some cattle and horses may have grazed on the land (Gudde, 1969; Hoover *et al.*, 1966; Bowman, 1958; Northrop, 1984; United States District Court Northern District, 1843-1865). During the early American period, Mountain House, a way station for travelers between

AREA OF INTENSIVE
ARCHAEOLOGICAL SURVEY

Figure 4.5-1



San Francisco and the southern mines, was established (Wood, 1883; Thompson and West, 1878). About the same time, in the mid-1850s, Mohr's Ferry Landing on Old River was constructed or established ~~which~~. **This** was also a transportation-related development, providing easy access across Old River (Hillman and Covello, 1985; Tinkham, 1923). Mountain House was west of the project site and Mohr's Ferry Landing was in the northeast corner of the project site. Mohr's Ferry Landing also became a shipping point for the coal from Corral Hollow mines during the 1850s, but the 1860s' floods caused shipping operations to be moved to higher ground to the southwest (Mosier, 1979; Tinkham, 1923; Hillman and Covello, 1985). This event resulted in the founding of the village of Wicklund about 1862.

For about 15 years, the river town of Wicklund, named for a local farmer, served as a center for trade and transportation, including a coal depot and export center, for the immediate area. At one time Wicklund had a hotel, blacksmith shop, and warehouse, as well as a number of private homes. The river town was set back from the river banks to avoid flooding (Mosier, 1979; Gilbert, 1879; Tinkham, 1923; Hillman and Covello, 1985).

The arrival of the Central Pacific railroad in the vicinity of the project site weakened Wicklund in 1869-1870. Then, the construction of a Central Pacific branch line through the project site in 1878 resulted in the decline of the town (Goodyear, 1877; Gilbert, 1879). Another small town, called Bethany, developed along the new railroad line. This village of about 80 people continued in existence until about 1940 (Gilbert, 1879; Hillman and Covello, 1985; Sunset Magazine Homeseekers, 1915). Most of the original acreage of Bethany is located outside the project site.

Other historic activities in the vicinity of the project site have included diversified irrigation-based agriculture and the construction of oil and gas pipelines (Hillman and Covello, 1985; Tinkham, 1923; Beck and Haase, 1974; White, 1962). These developments have left marks on the landscape in the form of private houses and barns, irrigation canals, pipelines, and oil pumping stations.

Prehistoric and Historic Archaeological Resources

One prehistoric archaeological site, Ca-SJo-136, is recorded within the project site near Mountain House Creek. The site record was prepared based on 1903 notes by a local collector. Only a general locational reference is provided in California Archaeological Inventory records and the site could not be relocated during an intensive survey of the mapped location during preparation of this DEIR. This site may have been destroyed or buried during almost a century of agricultural activities. Three historic archaeological sites were recorded during intensive survey in the project area in 1991. These sites are described below:

Ca-SJo-229H

This site consists of the remains of the village of Wicklund. The observed site materials consist only of a widely dispersed and thin scatter of historic artifacts, mostly bottle glass and ceramic fragments. Few diagnostic artifacts were found, but some items are consistent with dating prior to the turn of the century. These materials are scattered in an area approximately 200 meters by 180 meters. No structures or structural

4.5 CULTURAL RESOURCES

features are visible. The area has been cultivated over the last 100 or more years and extensive ground disturbance has occurred from construction of ditches and an adjacent levee and canal.

The integrity of this site is poor and the information potential of the observed artifacts is low. For these reasons, the site probably would not qualify for nomination to the National Register. However, the site's historical associations as an 1860s-1870s river town, important in early regional and local transportation and settlement, are relatively important. Therefore, if during the course of any construction, subsurface historic features or intact artifact deposits, such as trash dumps or privies, are uncovered, the information potential for this site may change.

Ca-SJo-230H

This site consists of a sparse historic artifact scatter consisting of glass, ceramic, and metal fragments in an area approximately 120 meters by 60 meters. A cut nail indicates a date prior to the 1890s and amethyst-colored glass fragments indicate a date prior to World War I. The property was owned by an E. S. Bonsall as early as 1870 until at least 1895. By 1912, a J.F. Faulkner owned the property (Wallace, 1870; Compton, 1895; Quail, 1912). A dwelling is shown at this location on a map as early as 1916 (U.S. Geological Survey, 1916b). The site materials thus appear to be well over 50 years old. It is unknown when the structure disappeared, but it is not shown on a 1953 topographic map (U.S. Geological Survey, 1953). No features or structural foundations are visible. The area has been cultivated for many years and a ditch has been constructed near the site materials. The integrity of the site is poor; the sparseness of the artifactual remains indicates that information potential is poor; and its historical associations are unimportant to State or local history. **It is unlikely that the site would qualify for the National Register of Historic Places.**

Ca-SJo-231H

This site consists of a scatter of historic artifacts, consisting primarily of glass and ceramic fragments. No structures, structural remnants, or other features were observed. The age of this site is uncertain. Artifacts provide little diagnostic material with regard to dating the site. However, it may be relevant that no recent material, such as plastic or aluminum were noted. No structures are shown on a 1916 topographic map (U.S. Geological Survey, 1916a), but a dwelling is evident by 1943 (U.S. War Department, 1943). Such maps are usually produced based on data derived a year or two earlier. Thus, the site is approximately 50 years of age. A 1953 map shows the addition of a barn or other outbuilding by that time (U.S. Geological Survey, 1953). The latest topographic map available, produced in 1978, still shows two structures at this location (U.S. Geological Survey, 1978). The removal date is unknown. The site, which is currently a cultivated sugar beet field, lacks integrity or important historical associations. The paucity of artifacts makes it unlikely that the site contains much information potential. **Therefore, the site would be unlikely to qualify for the National Register of Historic Places.**

Historic Structures

A number of historic (over 50 years of age) structures are located on the project site. Historic architectural evaluations have not been performed for this phase of work. The identified structures are described below.

18795 W. Grant Line Road

This structure is a one-story frame house with side-pitched roof, horizontal wood siding, and a porch across half of the front. A recent fire occurred in the house, and the roof and attic no longer exist. An intact barn exists at the rear of the house. A local resident reported that this house is at least 70 years old.

18621 Patterson Pass Road

A small one-story frame house, with a barn and a wooden water tower, are located at this address. The house is undistinguished and has had some modifications, such as installation of aluminum windows; the barn, with a cupola style roof called a monitor, is of particular interest.

18340 W. Byron Road

This location contain a house, two barns, and two garages. According to the owner, Mr. Arnaudo, the one-story stucco dwelling dates to about 1930, but has been moved from another location. The barns and, presumably, the outbuildings date from about 1925. The original homesite burned many years ago.

West Side of Kelso Road Near Byron Road

An old one-story frame house with a front pitched roof, a water tower, and a barn are located at this address. The house is dilapidated, but the barn, with a cupola, is of particular interest. The overhanging eaves of the main roof on the barn form vehicle shelters on either side.

West Side of Kelso Road Between Byron Road and Old River

This location includes a one-story frame house with a front porch. Two older sheds/garages are located near the house. The original house has had a recent addition to its north side.

East Side of Kelso Road Between Byron Road and Old River

A very small one-story cottage with horizontal siding is located at this address. A recent addition on the south side probably covers the original front entrance. Two barns and a long shed of indeterminate age are also located on the property.

North End of Henderson Road

This location includes an abandoned two-story frame house with vinyl siding which has a side pitched roof with a dormer window. The house is abandoned and the interior has been gutted, but contains a recent outside wood stair leading to the second story of the house. It is possible that the structure is being used for storage or as a barn.

Historic Trail

It is possible that the route of a National Historic Trail, the DeAnza Trail, may extend through the project site. The DeAnza Trail traces the DeAnza expedition route from Arizona through California. The exact DeAnza route is somewhat tenuous, but at least one local organization, Heritage Trails, believes that it may have passed through the project site, following Byron Road south from Contra Costa County and then south along Patterson Pass Road into Alameda County (Cardinet, 1992).

The National Park Service has the responsibility for establishing a comprehensive plan for the commemorative trail route but this work will not begin until mid-February 1992 (Olson, 1992). National historic trails are generally not continuous recreation trails, but most of them do have some segments available for recreational use. "In the case of DeAnza, trail proponents have expressed a strong desire for extended trails for retracement" (National Park Service, not dated). If the National Park Service establishes the DeAnza trail route through the project site, a representative of the Heritage Trails organization has expressed the desire that the trail be part of the new town plan by being incorporated into a multi-use recreational trail and acknowledged with interpretive historic route signs (Cardinet, 1992).

West Side Irrigation District Pumping Station (Wicklund Road Near Byron Road)

Although this location is outside the project site boundaries, it is immediately adjacent to the project on the east side of Wicklund Road. An old industrial building is located at this location and may date to the 1920s or before.

IMPACTS AND MITIGATION MEASURES

For the purpose of this DEIR, a potentially significant impact on cultural resources is defined as the effect of any activity that has the potential to disrupt or adversely affect a prehistoric or historic archaeological site or historic structure. For purposes of this DEIR a cultural resource is defined as a site or structure eligible for, or on, the National Register of Historic Places, or listed on the California Inventory of Historic Resources.

No archaeological sites within the project site are on, or are probably eligible for the National Register of Historic Places. No sites are listed on the California Inventory of Historic Resources. However, it is possible that unidentified subsurface prehistoric or historic archaeological materials may be located within the site. It is also possible that subsurface features or deposits may be uncovered in identified sites that do not currently appear eligible for the National Register. Such deposits may change the National Register eligibility of these sites. None of the historic structures within the project site have been evaluated for National Register eligibility by an architectural historian.

Impact

- 4.5-1 Development of the project could disturb subsurface prehistoric cultural deposits or artifacts related to the prehistoric setting or historic archaeological deposits or features dating from the establishment of Euro-American settlement in San Joaquin County.**

Development of project structures, roads, and utilities has the potential for disturbing undiscovered prehistoric subsurface cultural deposits. Deeply buried prehistoric sites, not visible to surface reconnaissance, have been found previously in the San Joaquin and Livermore Valleys. Portions of the project site are in a floodplain of Old River and it is possible that alluvial deposits may have covered prehistoric cultural resources.

Although surface artifactual materials in historic archaeological sites Ca-SJo-229H, -230H, and -231H are limited and have little historic information potential, buried features such as structural foundations or concentrated trash deposits might have information potential that could contribute to a site's eligibility to the National Register. In addition, subsurface historical deposits may be located in undiscovered historic archaeological sites.

Mitigation Measures

- 4.5-1(a) *When specific land use and development plans are formulated as part of the Specific Plan, additional archaeological surveys should be conducted in areas of specific development impact that have not been subjected to intensive archaeological reconnaissance.*
- 4.5-1(b) *Because of the possibility that a buried site, Ca-SJo-136, may be located in the vicinity of Mountain House Creek, construction activity in the Mountain House Creek area should be monitored by an archaeologist.*
- 4.5-1(c) *Because of the potential historic significance of Ca-SJo-229H, the site of the village of Wicklund, and because of the potential for buried features or artifact deposits, an archaeologist should monitor any construction work in the area of this site.*
- 4.5-1(d) *If, during the course of construction, subsurface historic archaeological features were identified on sites Ca-SJo-230H and Ca-SJo-231H or anywhere within the project site, excavation should cease and an archaeologist should be contacted to evaluate these materials.*
- 4.5-1(e) *If, during the course of any construction activity, buried prehistoric cultural resources are found, excavation should cease and an archaeologist should be contacted immediately to evaluate these resources. Such evaluation may entail archaeological test excavation and/or mitigative data recovery.*

Impact

- 4.5-2 **Development of the proposed project could disturb previously unknown human prehistoric burial sites.**

If deeply buried prehistoric sites within the project site were disturbed during construction activities, associated human burials might be found during site development. Human burials have been found in many, if not most, prehistoric archaeological sites located in the San Joaquin Valley and throughout California.

Mitigation Measure

- 4.5-2 *The County Coroner, the Native American Heritage Commission, and an archaeologist should be informed and consulted if a human prehistoric burial site were discovered. An agreement should be formulated between the Native American representative, the archaeologist, San Joaquin County, and the developer with regard to the proper treatment and disposition of human remains and associated artifacts in the Specific Plan. Such treatment and disposition may require archaeological excavation and reburial.*

Impact

- 4.5-3 The proposed project could destroy historic structures over 50 years of age.**

At least eight locations of historic structures or structural complexes have been identified within the project site. Historical architectural evaluations have not yet been conducted.

Mitigation Measure

- 4.5-3** *When specific land use information and detailed infrastructure planning is presented as part of the Specific Plan, a determination should be made as to whether any of the structures or structural complexes described in this DEIR would be impacted. All such structures should be evaluated by an architectural historian. After evaluations are made and if any adverse impacts are identified, mitigation measures should be suggested and followed. Such mitigation might consist of avoidance of impacts, detailed architectural documentation and history, or removal of a building to another location.*

Impact

- 4.5-4 The proposed project could impact the route of the projected DeAnza Trail, a National Historic Trail.**

Mitigation Measure

- 4.5-4** **The applicant should stay in contact with the National Park Service with regard to the development of its comprehensive plan for the DeAnza Trail. If the commemorative trail will pass through the project site, the Mountain House Specific Plan should incorporate the DeAnza trail using historic markers along the route and, preferably, develop a multi-use recreational and historic interpretive trail which would incorporate the projected route of the DeAnza Trail.**

4.6 GEOLOGY, SOILS, AND SEISMICITY

SETTING

Topography

The project site is located near the base of the foothills of the eastern flank of the Diablo Range on a gentle northeast-sloping surface which has been dissected by small northeast flowing streams, including Mountain House Creek. The elevations at the site range from approximately 160 feet above mean sea level (msl) near the southwest corner of the site to near sea level along Old River which forms the northern boundary of the site (Figure 4.6-1). The average slope at the site is less than one percent. No slopes are greater than three percent with the exception of the side slopes of the levees along Old River.

The topography of much of the site has been modified by agricultural operations to optimize irrigation and control erosion. These modifications reflect only minor changes in the site's overall topography. A borrow pit for earthen fill materials for highway and levee construction was excavated at the southwest corner of the project site (Figure 4.6-1). Levees for flood protection have been constructed along Old River and the irrigation ditch along Wicklund Road at the site's eastern boundary, as well as along the Delta-Mendota Canal (Figure 4.6-1).

Regional Geology

The project site is located on the western side of the central portion of the San Joaquin Valley in the Great Valley Geomorphic Province of Central California. The regional geology of the site and surrounding vicinity is shown in Figure 4.6-2. The bedrock that underlies the region is named the Great Valley Sequence, consisting of sedimentary rocks of Late Jurassic to Cretaceous age (140 to 65 million years old). These older sediments are overlain by Tertiary to Holocene (less than 65 million years) non-marine sediments. The thickness of the Tertiary and younger deposits is approximately 4,000 feet (Bartow, 1985).

Site Geology

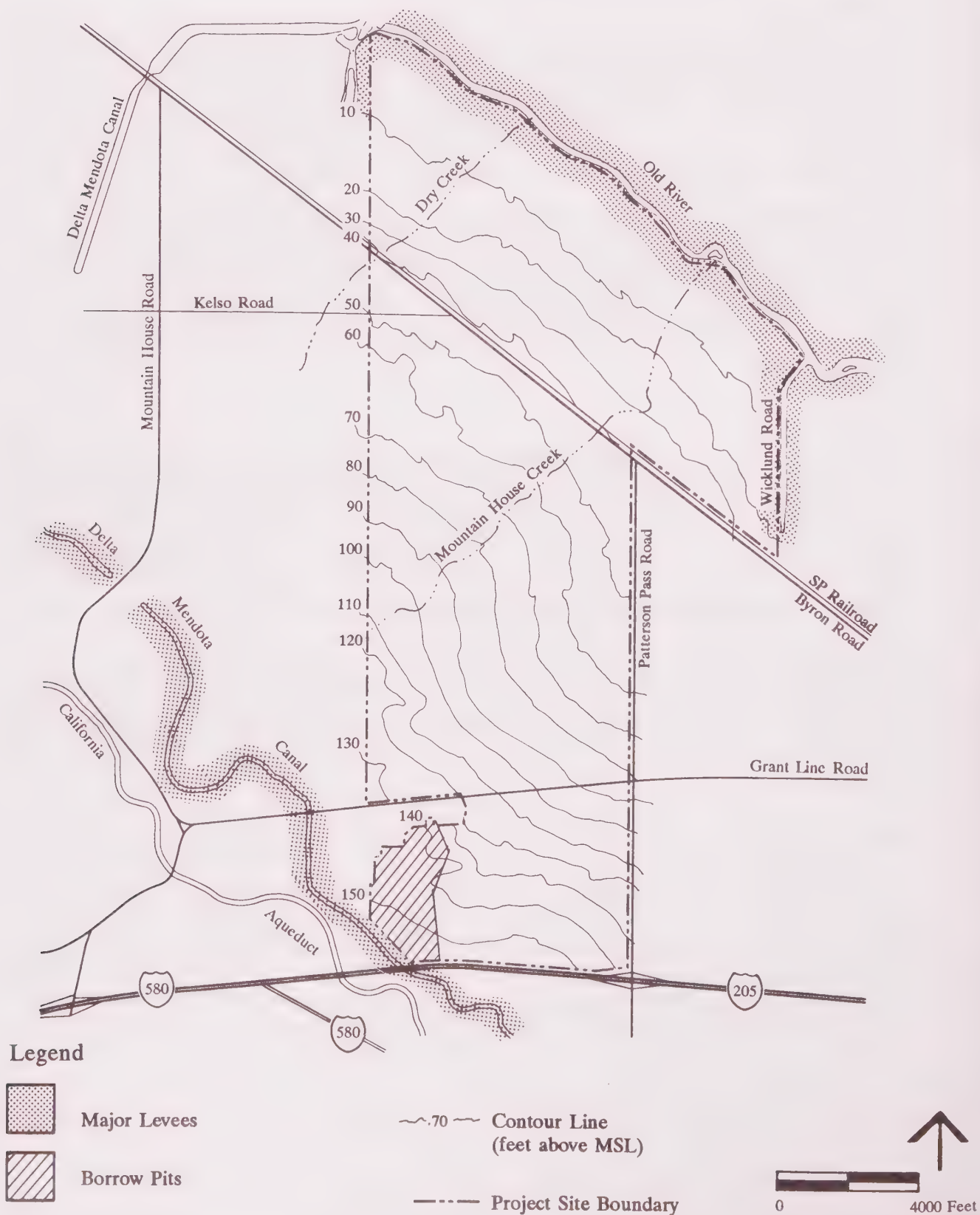
Regional geologic mapping (Reiche 1950; Clark 1955; Atwater, 1982; Page, 1986) indicates that the project site is underlain by Pleistocene to Recent (less than two million years old) non-marine sediments. The majority of these sediments was deposited by streams (alluvial deposits) draining the uplands area east of the project site.

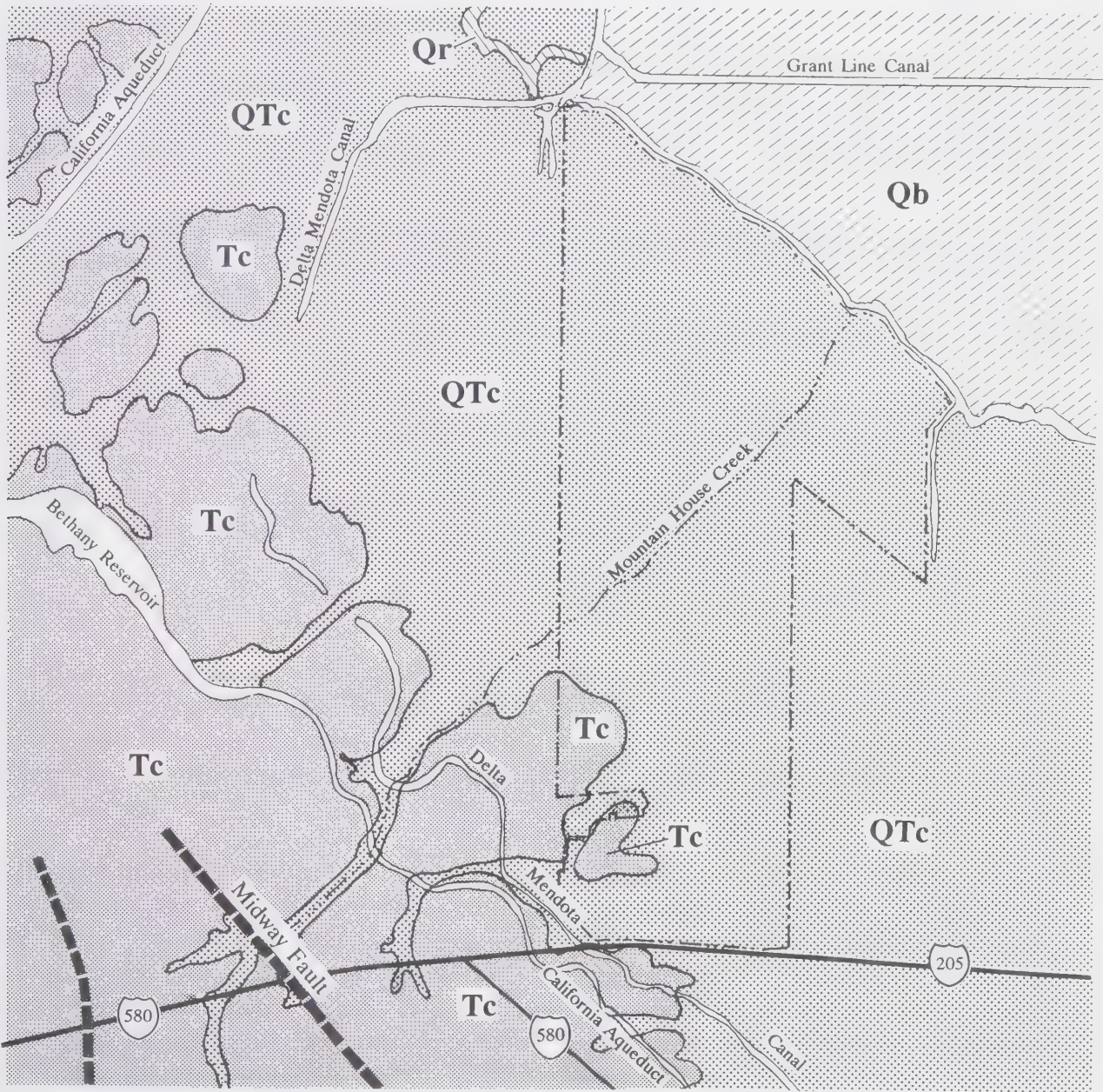
Subsurface investigations at the site indicate that the majority of the near-surface sediments consists of silt and clay. Groundwater was encountered at depths varying from 5 to 16 feet below the ground surface at most of the locations of on-site investigations. Thin layers of sand and gravel deposits were encountered at shallow depths in the southern portion of the site (Earth Systems Consultants, 1990). These deposits were apparently saturated and medium dense to dense.¹ Sandy silt and sand deposits at depths below the groundwater table were reported from data collected from borings made in the northern portion of the site (Kleinfelder and Associates, 1989). Subsequent drilling and sampling near these locations did not corroborate the presence of these deposits (Earth Systems Consultants, 1990) which may indicate that the silty sands are

¹Deposits are saturated when all spaces between the grains are filled with water.


SITE TOPOGRAPHY, LEVEES, AND BORROW PITS


Figure 4.6-1









Legend

- Qr  Recent (Holocene) River Deposits

Qb  Recent (Holocene) Flood Basin Deposits

QTc  Young (Quaternary to Tertiary) Alluvial Deposits

Tc  Older (Tertiary and Pre-Tertiary) Marine and Continental Sedimentary Rocks
-  Potentially Active Faults

 Project Site Boundary



Source: USGS, 1972 Miscellaneous Field Studies Map, MF-338
USGS, Open File Report, 80-535
USGS, 1986 Professional Paper, 140 1.C

4.6 GEOLOGY, SOILS, AND SEISMICITY

of limited extent. The saturated fine-grain deposits may be subject to liquefaction. If liquefaction were to occur, it would be localized in nature and would not occur on a regional level (Earth Systems Consultants, 1990).

The youngest alluvial sediments are the deposits along the present stream channels. Recent sediments have been mapped along Old River and are described as floodplain and floodbasin deposits (Atwater, 1982; Page, 1986). The upper ten feet of these deposits includes clays with high water content, low density, and thin layers of organics (Earth Systems Consultants, 1990).

The gentle hillslopes in the southwestern portion of the site do not show evidence of significant landsliding. The project site is located outside areas of southwest San Joaquin County identified as susceptible to landsliding (San Joaquin County, 1973). Swales filled with slope-derived sediments (colluvium) have been identified in this area (Nilsen, 1975). While failure of similar geomorphic features during high precipitation periods (creating mudflows or landslides) is possible even on gentle slopes, evidence of such failures has not been mapped within or immediately adjacent to the project site.

Soils

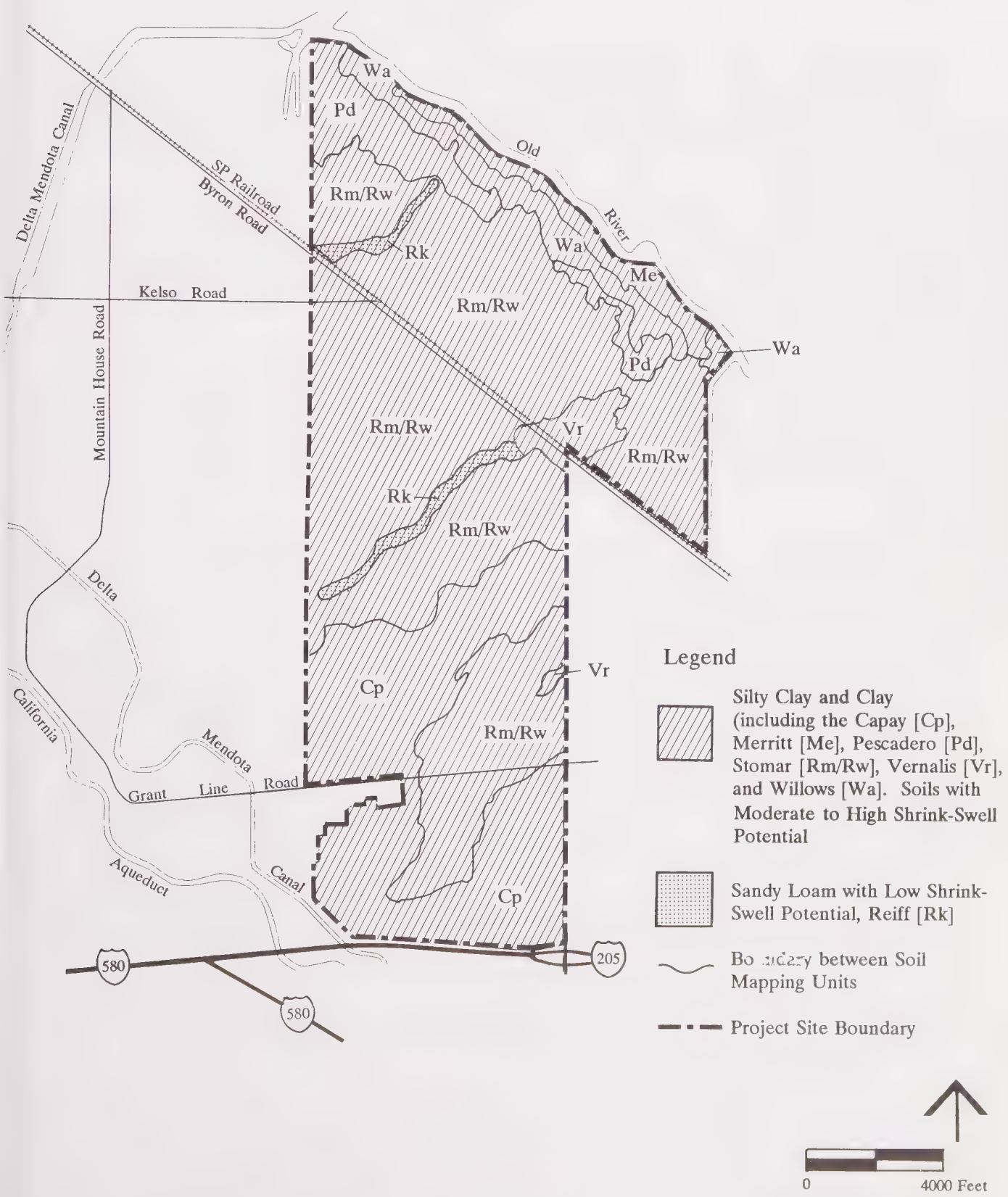
Soil is generally defined as the surficial earth materials containing mineral and organic matter that are the product of physical, chemical, and biological forces. The development of soil is a function of topography, climate, vegetation, biological activity, the materials on which the soil develops, and time. Distinctive soil types are defined on the basis of a variety of factors including the texture (range of grain sizes), chemistry of constituent particles, and moisture conditions.

Seven distinctive soil types have been mapped by the U.S. Soil Conservation Service (SCS) at the site (U.S. Department of Agriculture, 1988) (Figure 4.6-3). Six of these soil types have similar characteristics. These surface soils, which include the Capay (Cp), Merritt (Me), Pescadero (Pd), Stomar (Rm/Rw), Vernalis (Vr), and Willows (Wa) soils, are predominantly silty clay and clays developed on the gently sloping alluvial fan sediments. The soils are characterized as being deeply developed and moderately well drained, with low permeability. The high plasticity of these soils is related to the chemistry of the abundant clay particles. These soils have moderately-high to high shrink-swell potential. Seasonal wetting and drying of these soils cause expansion and contraction of clay particles within the soil. The erosion potential of these soils is low.

The seventh soil type, Reiff mapping unit (Rk), is distinctive for the comparatively higher content of sand particles. These sandy loam soils are found along the channels of Mountain House Creek and Dry Creek (Figure 4.6-3). The low shrink-swell potential for this soil is related to the low content of expansive clay. The erosion potential for the Reiff soils is low when the topography is gentle.

Six of the seven soil types at the project site are considered by SCS to be Class I or II soils (Meissner, 1991). These include map units Cp, Me, Rk, Rm/Rw, and Vr (Figure 4.6-3). Class I soils have few limitations that restrict their use; these soils are generally considered to be prime agricultural soils by SCS. Class II soils have

Figure 4.6-3



Source: U.S. Department of Agriculture, SCS, 1990.

some limitations that reduce the choice of plants or that require moderate conservation practices; these soils are also considered prime agricultural soils by SCS. Class II soils generally require good management of irrigation water and drainage to reduce waterlogging and to avoid raising of the water table. In general, soils at the project site are suitable for the production of row crops (tomatoes, corn, sugar beets, and asparagus), field crops, alfalfa, and dryland farming.

Soils which have characteristics reflecting development within the hydrological and ecological environment of wetlands are referred to as hydric soils. Although wetlands have been identified within the project site, none of the mapped soil units in the project site are classified as hydric soils (U.S. Department of Agriculture, 1986). Hydric soils, if present at the site, may be localized in extent and would not be identified by SCS mapping techniques.

The northern portion of the project site is in the proximity of the Delta lowlands region of the Sacramento-San Joaquin Delta. Within the Delta lowlands, soils are high in organic content and in some cases include peat deposits. Historic drainage of the organic soils has allowed oxidation of the organic material, resulting in land surface subsidence. The mapped soils within the project site do not have high organic content.

Seismicity

The project site is located within a seismically-active region of west-central California. The seismicity of this region is primarily related to the San Andreas Fault system. The San Andreas Fault system contains several major faults and fault zones including the San Andreas Fault Zone and the San Gregorio-Hosgri Fault Zone, west of San Francisco Bay, and the Hayward, Calaveras, Concord, and Greenville faults in the East Bay hills and the Diablo Range. Relatively lower seismic activity characterizes the eastern flank of the Coast Ranges and the area within the San Joaquin Valley. The faults in this area have less well defined surface expression and the seismic risk posed by these faults has not been clearly identified. A description of seismicity and associated terminology is summarized in Appendix 10.11.

The active and potentially active faults located within about 50 miles of the boundaries of the project site are shown in Figure 4.6-4. These faults and their seismic potential are listed in Table 4.6-1 which presents estimates of the magnitude of the largest expected earthquake generated by each of the faults (Wesnousky, 1986; Mualchin and Jones, in press). The maximum earthquake which can be reasonably expected to occur within the present geologic framework along a fault is typically referred to as the maximum credible earthquake (MCE). The probability of an earthquake occurring along a fault is a function of the estimated interval between earthquakes (recurrence interval), and the known or estimated date of the last major earthquake. Estimates of the probability of maximum credible earthquakes for some of the major faults within California have been made by the United States Geological Survey (USGS) for the next 30-year period (U.S. Geological Survey, 1990).

TABLE 4.6-1

**MAJOR FAULTS POTENTIALLY AFFECTING
THE PROJECT SITE**

Fault	Distance from Project (miles)	Maximum Credible Earthquake ¹ (MW) ³		Recurrence Interval ² (years)	Years of Historic Damaging Earthquakes	Expected Maximum Peak Ground Acceleration at Site during MCE (g) ⁴	Expected Ground Shaking Intensity at the Site (MMI)
<u>Active:</u>							
Antioch	16	6.6	(6.75)	N/A	1889?, 1965	0.17	VIII
Calaveras	21	6.3	(7.5)	150	1861	0.19	VIII
Corral Hollow	7	6.5		N/A	None known	0.28	VIII
Green Valley-Concord	27	6.9	(6.75)	424	1955	0.12	VII
Greenville	8	6.8	(7.25)	3,585	1980	0.50	IX
Hayward	27	7.1	(7.5)	264-556	1836, 1868	0.16	VIII
Ortogonalita	35	6.7	(7.0) ⁵	10,000		0.08	VII
San Andreas (North Coast Segment)	46	7.8	(8.0)	300	1833, 1906	0.18	VIII
<u>Potentially Active:</u>							
Las Positas	12	N/A	4.3	872	None known	0.07	VII
Livermore	13	N/A	6.2	N/A	None known	0.13	VII
Midland	10	N/A	7.0 ⁵	N/A	1889?	0.37	IX
Midway	2	6.3	N/A	2,651	None known	0.38	IX
San Joaquin	5	N/A	6.6	1,083	None known	0.37	IX

¹ The maximum credible earthquake (MCE) is the largest earthquake expected under the present geologic framework. The sources for MCE estimates are Wesnousky (1986) and (shown in parenthesis) Mualchin and Jones (in preparation), unless otherwise noted.

² Recurrence interval, or repeat time, is the estimated interval of time between maximum credible earthquakes. The source for recurrence intervals are summarized in Wesnousky (1986).

³ The estimated magnitude of future earthquakes can be made using the Moment Magnitude method. The magnitude of potential earthquakes on such faults is made by calculations based on the earth materials in the area of the fault and measurement or estimation of the length of the fault and previous displacement along the fault.

⁴ Expected maximum peak ground accelerations are estimated by distance-magnitude relationships developed by Mualchin and Jones (in press).

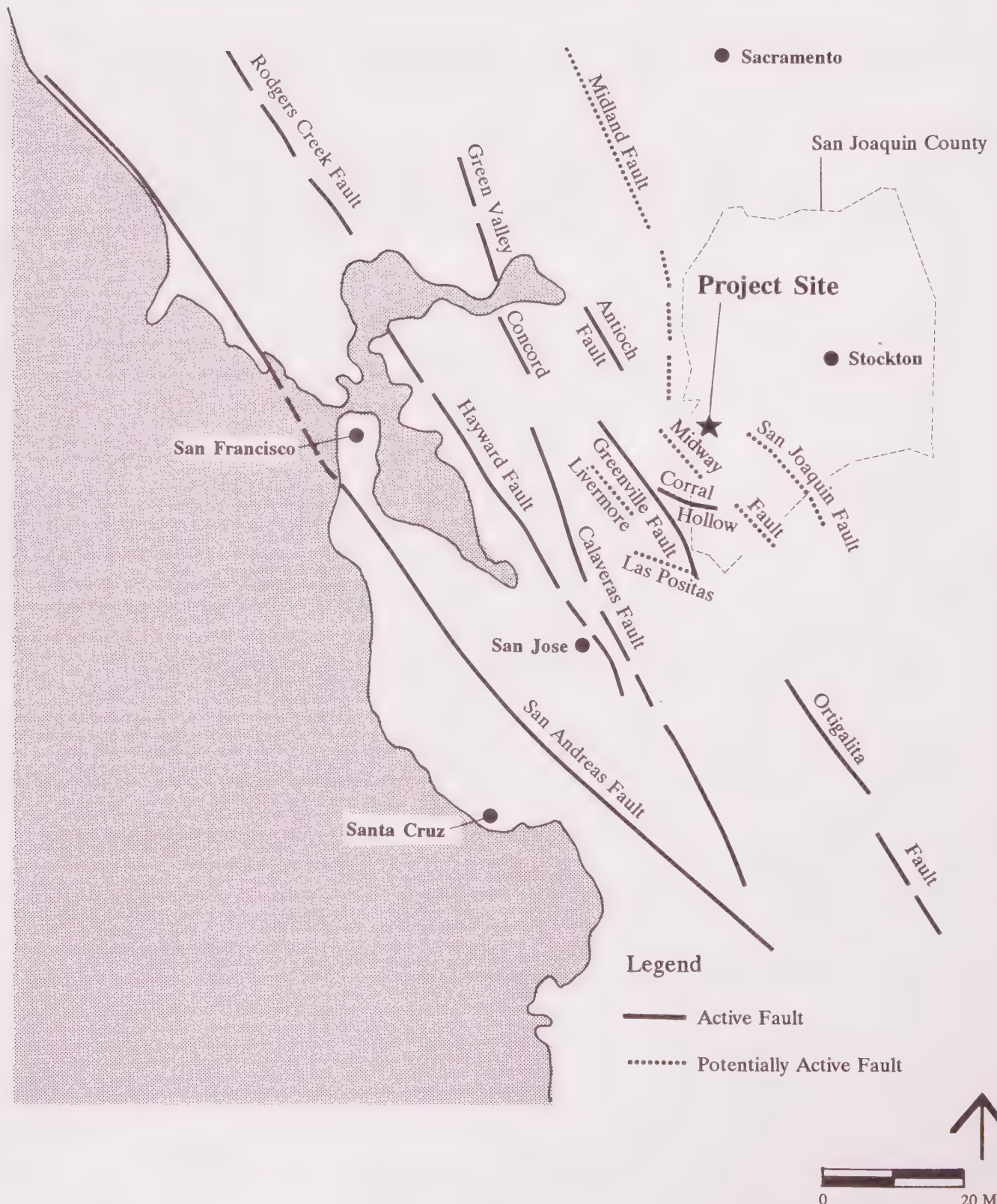
⁵ Source of estimated magnitude: Greenfelder, 1974.

Notes: MW= Moment Magnitude

MMI= Modified Mercalli Intensity Scale, see Table 10.11-1.

REGIONAL FAULTS

Figure 4.6-4



Source: CDMG, 1975

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The USGS estimates the probability of a large earthquake, magnitude 7 or greater, occurring on any of the faults within the San Andreas Fault Zone (SAFZ) within the next 30 years to be approximately 66 percent (U.S. Geological Survey, 1990). The estimated probability and magnitude of future events is discussed, for each fault trace and fault segment, in Appendix 10.11.

Active Faults

The Alquist-Priolo Special Studies Zones Act of 1972 (the "Act") was passed by the California legislature to reduce the hazards of surface rupture along seismically active faults within the State. Under the Act, the California Division of Mines and Geology (CDMG) was charged with identifying active faults within the State and delineating special studies zones (SSZs) in which surface rupture by faulting was probable. The CDMG defines an active fault as a fault that has evidence of surface displacement within the last 11,000 years (Holocene). Most of the recognized active faults within the San Francisco Bay Area are associated with the San Andreas Fault System, a broad zone of seismic activity and faults formed as the result of relative motion between the Pacific and North American plates. The SAFZ includes several well-studied faults and fault zones as well as less well-understood subsidiary faults.

No active faults have been identified at the project site (Hart, 1990). Several active faults associated with the SAFZ could generate earthquakes that could cause strong ground shaking at the project site. These include the San Andreas, Hayward, Calaveras, Greenville, Green Valley-Concord, Antioch, and Ortingalita fault zones. Background information on each of these fault zones is contained in Appendix 10.11; the distance from the project site, MCE, and expected ground shaking at the project site are listed in Table 4.6-2 for each of these faults.

Of the active faults in the project vicinity, the Greenville fault zone is located closest to the project site. The Greenville fault has an estimated MCE that ranges from 6.8 to 7.25. An MCE event could generate an estimated maximum Mercalli Intensity of IX at the project site (Tables 4.6-1 and 4.6-2).

Recent investigations in southwestern San Joaquin County have discovered evidence of Holocene activity on the Corral Hollow fault, possibly related to the Greenville fault zone and located seven miles from the project site (Carpenter, 1991). The Corral Hollow fault has an estimated MCE of 6.5. An MCE event could generate an estimated maximum Mercalli Intensity of VIII at the project site (Tables 4.6-1 and 4.6-2).

Potentially Active Faults

A fault is considered to be potentially active if evidence indicates that surface displacement along the fault has occurred within the last two million years (Quaternary). Potentially active faults include faults which may be associated with historic seismicity. Segments of faults that have been designated as active may be considered potentially active if that portion of the fault does not exhibit sufficient evidence of Holocene activity. Numerous potentially active faults have been identified within 50 miles of the project site. For purposes of this environmental review, only potentially active faults within 20 miles of the project site are analyzed (Table 4.6-1). Potentially active faults in the project vicinity include the San Joaquin, Midland,

Midway, Livermore, and Las Positas faults. The geologic evidence for activity on each of these faults is summarized in Appendix 10.11.

The positions of the San Joaquin, Midland, and Midway faults coincide generally with the regional geologic boundary separating the Coast Ranges to the west and the Great Valley to the east. Recent investigations of seismicity and geological structures suggest that large historic earthquakes have occurred and future earthquakes are probable along this boundary, which extends 360 miles along the western side of the Great Valley. The 1892 Winters and 1983 Coalinga earthquakes have been interpreted as releases of stress along this boundary (Wong, *et al.*, 1988).

Liquefaction

The project site is underlain by young alluvial deposits. Some of these deposits consist of silty sands, particularly along Mountain House Creek and Old River. Where loose and well-sorted sands are saturated by high groundwater conditions, soils may be prone to liquefaction during seismic shaking. The distribution of soils susceptible to liquefaction has not been identified at the project site.

IMPACTS AND MITIGATION MEASURES

Introduction

Under CEQA, exposure of people or structures to major geologic hazards is considered a significant adverse impact. Geologic hazards that may affect the proposed project during the construction and post-construction periods include groundshaking and associated ground failure. For the purpose of this DEIR, significant geologic hazards would pertain to soil and/or seismic conditions so unfavorable that they could not be overcome by reasonable design, construction, and maintenance practices; in addition, exposing an increased number of people to risk of injury would constitute a significant impact.

The potential geologic hazards associated with the proposed project were evaluated based on the Preliminary Geotechnical Study (Earth Systems Consultants, 1990), various documents, and a site visit. Since the site is relatively flat, slope stability is not considered a significant potential impact. The potential impacts that are discussed below concern loss of prime agricultural soils, geotechnical hazards associated with soils, and seismicity.

Impact

4.6-1 Soils exposed during grading and project construction could be subject to excessive erosion.

Disturbed soils, especially on slopes, tend to be easily eroded by wind and water. Although the project site is generally level, deep excavations for foundations, trenches for utility lines, and other topographic alterations (for landscape and/or levees) could increase erosion hazards. The applicant proposes major modification of the Mountain House Creek channel, which will require significant excavation. These activities could result in adverse impacts to riparian vegetation and habitat. Eroded soils could enter surface water systems, causing

a reduction in water quality. Sedimentation in storm drains can adversely affect storm drain capacity. Soil erosion associated with grading activities is a potentially significant impact.

Mitigation Measures

- 4.6-1(a) **The applicant should develop erosion and sediment control standards for the proposed project and submit the standards to the San Joaquin County Department of Public Works for review and approval prior to approval of the Specific Plan.** *Prior to any on-site construction, an erosion and sediment control plan for ~~the entire proposed~~ each individual construction project should be developed by the project engineer and submitted to the San Joaquin County Department of Public Works for review and approval. The plan should comply with requirements of the San Joaquin County Grading Ordinance and the National Pollutant Discharge Elimination System non-point-source reduction programs, as a minimum.*
- 4.6-1(b) *Excavation of creek channels would require permits by the California Department of Fish and Game. These permits would ensure protection of water quality by requiring minimization of sedimentation.*

Impact

- 4.6-2 **Surface soils with high shrink/swell potential could cause damage to building foundations and paved surfaces.**

Soils that shrink and swell in response to moisture fluctuations may cause severe damage to buildings and infrastructure by causing differential movement in rigid structures. Hazards associated with shrink/swell soils can be avoided through proper site drainage and foundation design. The potential adverse impacts of soils with high shrink/swell potential are avoidable if these soils are recognized before design and construction of improvements. Implementation of either of the following mitigation measures would reduce this potentially significant impact to a less-than-significant level.

Mitigation Measures

- 4.6-2 **Prior to ~~development~~ approval of the Specific Plan, a ~~detailed~~ preliminary geotechnical investigation of on-site soils should be conducted. This investigation should identify soils with high shrink/swell potential and recommend appropriate foundations and pavement subgrade treatment. Detailed geotechnical investigations would be required at the Tentative Map stage.**

Impact

- 4.6-3 **Settlement may occur if loads (fill and/or structures) are placed over the low-density clays along Old River.**

If the anticipated amount of ground settlement is not considered in foundation design and building load calculations, structural damage may occur. Settlement can also cause warping and cracking of roads and sidewalks, and rupture of utility lines.

Mitigation Measure

- 4.6-3 *Areas underlain by low-density clays should be left as open space, or alternatively, building foundations should be designed to minimize potential settlement.*

Impact

- 4.6-4 **Levee failure along Old River and the Delta-Mendota Canal could be caused by moderate to strong groundshaking during an earthquake.**

The levees along Old River and Wicklund Road in the project site are constructed of unengineered fill. These flood control structures were not designed to withstand forces caused by strong groundshaking. Expected maximum groundshaking intensities of Mercalli VIII to IX could cause levee failure and flooding of a portion of the project site.

Mitigation Measure

- 4.6-4 *Levees should be upgraded to meet engineering standards to ensure structural integrity under the anticipated maximum ground acceleration of 0.5g. A feasibility study to determine the cost of levee reconstruction and to examine alternatives, such as setting aside open space in the levee failure flood zone, should be completed prior to development of the Specific Plan.*

Impact

- 4.6-5 **Liquefaction could cause foundation failure in areas underlain by saturated sandy sediments.**

Areas near the Old River may be covered by relatively thick layers of loose, saturated, and well-sorted sands. Such sediments are vulnerable to liquefaction. Liquefaction can cause building and/or foundation failure, even in otherwise well-designed structures. Liquefaction-induced ground failure could also cause major damage to roads, elevated freeway structures, and utilities. This damage could result in disruption of transportation, public services, and emergency response.

Mitigation Measure

- 4.6-5 *A detailed geotechnical investigation should be conducted prior to development of the Specific Plan to determine areas that may be susceptible to liquefaction. The report should recommend design criteria for construction in these areas. Development in areas identified as susceptible to liquefaction should be limited to open space or very-low-density development. All structures, roads, and utility lines proposed in these areas should follow design criteria that reduce potential liquefaction impacts. Unless these areas are reserved for open space, the impacts associated with liquefaction would remain potentially significant.*

Impact

- 4.6-6 **Strong groundshaking during an earthquake could cause structural damage to improvements and injuries to residents of the proposed project.**

Structural damage that may occur during an earthquake at the site may include damage to buildings and infrastructure (roads, bridges, and utilities). A disrupted infrastructure could inhibit disaster relief efforts, cause water and power supply shortages, and limit communications and transportation.

Several laws designed to minimize the potential adverse effects of an earthquake exist in California. These include the Hospital Seismic Safety Act of 1972, Essential Services Buildings Seismic Safety Act of 1986, (concerning construction of buildings for police, fire, emergency services), and the Field Act of 1933 (concerning construction of schools). In addition, the Uniform Building Code (UBC), last updated in 1988, provides construction guidelines for residential, commercial, and industrial buildings. UBC has divided the United States into zones based on seismic risk. Zone 1 is likely to experience the least amount of groundshaking; Zone 4 the most. The site is located in seismic Zone 3, and is adjacent to Zone 4 in Alameda County and southern San Joaquin County. Implementation of the above mentioned laws would significantly reduce the earthquake hazards associated with building collapse and infrastructure disruption. However, the potential for such hazards remains a significant unavoidable adverse impact.

Mitigation Measures

- 4.6-6(a) *The potential hazards associated with building collapse and infrastructure disruption due to seismic activity cannot be fully mitigated.*
- 4.6-6(b) *Project residents and workers should be made aware of the seismic hazards associated with the area and informed of ways to reduce these hazards. The project applicant should develop and implement a community earthquake preparedness plan, to assist in the goal of community education.*

4.7 HYDROLOGY AND WATER QUALITY

SETTING

Climate

The San Joaquin Valley is bounded to the east by the Sierra Nevada Range and to the west by the Diablo Range. The Diablo Range forms a rain shadow and average annual precipitation decreases markedly east of the crest of the mountains. The majority of the annual precipitation falls as rain during the winter rainy season from November through April. The mean annual precipitation at the project site is between 10 and 12 inches per year (Rantz, 1971). The depth of precipitation at the project site during a 100-year frequency, 24-hour duration storm event is estimated to be approximately three inches (Rantz, 1971).

Surface Water

The project site is located on a gentle, northeastward sloping alluvial surface at the base of the eastern flank of the Altamont Hills. The elevation of the site ranges from approximately 160 feet above mean sea level (msl) along the central portion of the western boundary of the project to less than five feet (msl) along the northern boundary. The Altamont Hills are a foothill region within a group of northwest-trending low mountain ranges, which are collectively referred to as the Diablo Range. The Altamont Hills rise to a drainage divide located approximately six miles west of the project site. Streams draining the western side of the divide flow westward toward the Livermore and Las Positas valleys. The eastern flank is drained by northeastward flowing streams that discharge to the San Joaquin River system. One of the channels of this system, Old River, forms the northern boundary of the project site. A levee on the project site, maintained by local landowners, protects the site from flooding. The levee on the northern bank of the river protects the Fabian Tract and is maintained by Maintenance District 773.

The Delta

The San Joaquin River joins the Mokelumne, Calaveras, and Sacramento rivers to form the Sacramento-San Joaquin Delta (Delta), which discharges to San Francisco Bay. The Delta covers an area of over 700,000 acres and contains over 700 miles of interconnected channels and canals, many of which are controlled by a system of flood protection levees (California Department of Water Resources, 1987). The Delta is one of the largest protected waterways in the western United States and one of the most valuable freshwater resources in California.

Export of water from the Delta to other areas of California has been occurring since the completion of the Contra Costa Canal in 1940. The two major water export projects, the Central Valley Project and the State Water Project, control operations of the Delta-Mendota Canal and the California Aqueduct. The California Aqueduct drains water from the Clifton Court Forebay facility in the southwest portion of the Delta. The Delta-Mendota Canal receives water pumped from intakes located near the northwest corner of the proposed project.

Several major modifications of the Delta water supply network are proposed for improving circulation within the Delta and increasing operational flexibility of the State Water Project (California Department of Water Resources, 1987). These modifications include channel widening in the North Delta and installation of pro-

posed flow control structures, or "tide gates," on Grant Line Canal, Middle River, and Old River. The gate on Old River would be installed within that reach of Old River forming the northern boundary of the project site.

The planned improvements of the Delta circulation system would have profound effects on the hydraulics of Old River at the proposed project site. A tide gate on Old River would allow eastward flow during the rising tide and would prevent westward flow during the falling tide to maintain increased water elevation within Old River. The gates would be operated primarily during the irrigation season when increased water surface elevation is most advantageous. The effects of operation of the tide gate on Old River would include reduction of flow velocity in the channel and increase the residence time of water in the channel (Appendix 10.12). The precise location of the gate on Old River has not yet been determined.

A 5,400-foot long dredged canal along Wicklund Road forms the eastern boundary of the northeast corner of the project site (Figure 4.7-1). Levees on the western and eastern banks contain this canal which is open to Old River. West of the northwest corner of the project site, a levee has been constructed along the eastern margin of a small marina (Del's Harbor as shown in Figure 4.1-1).

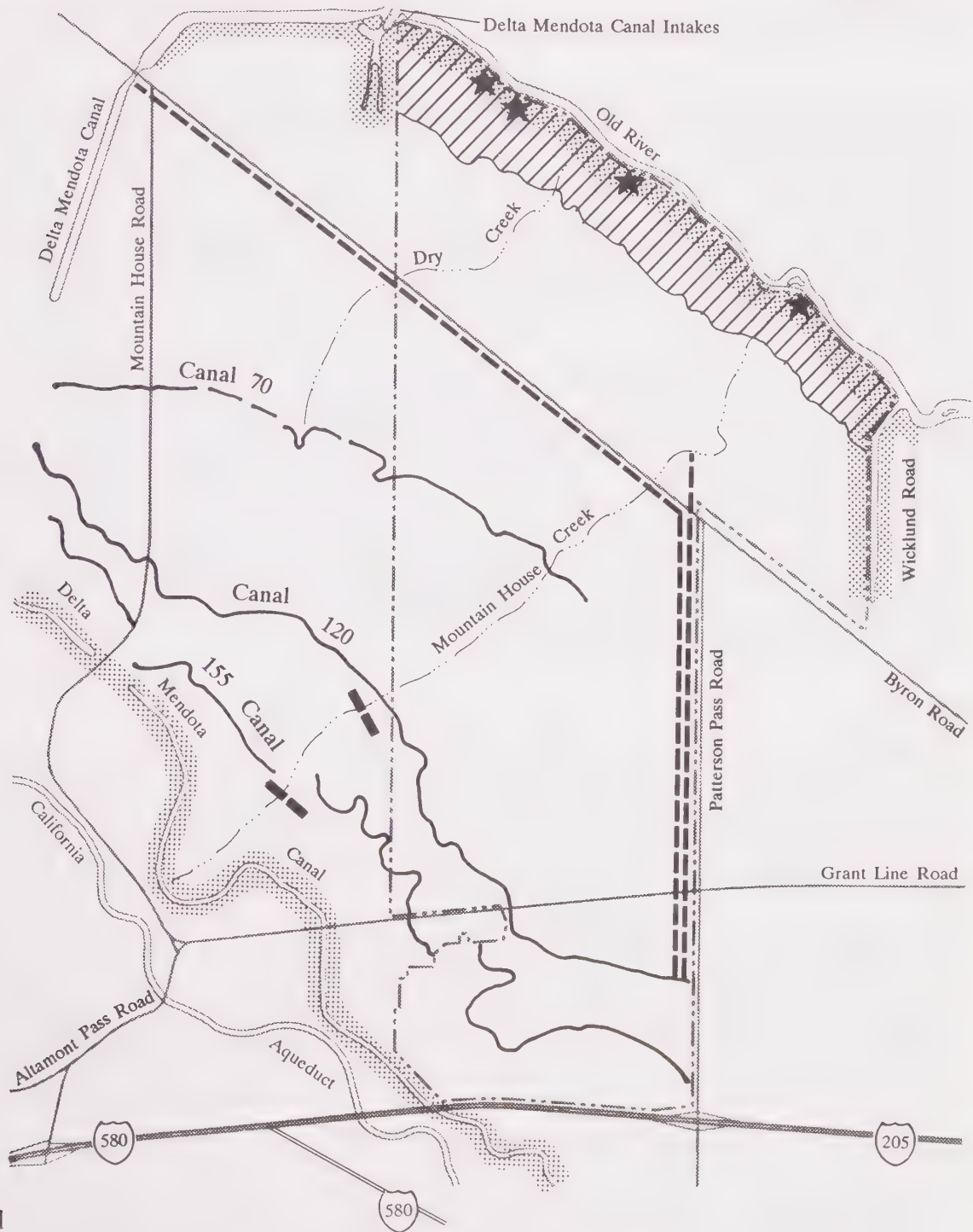
Mountain House Creek

Mountain House Creek, which trends northeast-southwest through the central portion of the project site, is one of two northeastward flowing stream channels that traverse the project site (Figure 4.7-1). This Creek drains an area of approximately 15 square miles, most of which is located in the foothills west of the project site. The runoff delivered to the western boundary of the site from the Mountain House drainage area during the 100-year, 24-hour storm would be approximately 1,300 cubic feet per second (cfs) (Century West Engineering, 1991). Three other smaller drainage areas, which do not have well defined channels, discharge runoff to the southwest corner of the project site. The cumulative total of the additional drainage area is approximately 6.5 square miles, contributing approximately 445 cfs of runoff during a 100-year storm (Century West Engineering, 1991).

Although Mountain House Creek is probably seasonal or intermittent in its natural condition, very low flows are reported year-round which are probably supplied by leakage from the Delta-Mendota Canal and the California Aqueduct (Trimark Communities, 1990). The creek flow is conveyed under the California Aqueduct, Mountain House Road, and Delta-Mendota Canal (DMC) through culverts. Along the reach of the Creek between the western boundary of the site and the crossing at the DMC, significant erosion has occurred along the Mountain House Creek channel (Trimark Communities, 1990). Two small earthen dams have been constructed along this reach of the Creek to create small ponds (Figure 4.7-1). Mountain House Creek is siphoned beneath two irrigation canals that are operated by the Byron-Bethany Irrigation District (BBID). The canals trend northwest-southeast, approximately parallel to the contours of the ground surface at elevation 155 feet above mean sea level and 120 feet msl. "Canal 155" and "Canal 120" cross the southwestern corner of the project site (Figure 4.7-1).

SITE DRAINAGE FEATURES

Figure 4.7-1



Legend

- Area Subject to Flooding during 100-Year Event
- Drainage Channel
- Irrigation Canal
- Earthen Dam
- Farm Drain
- Levee Slope
- Pump Station
- Project Site Boundary



BASELINE

4.7 HYDROLOGY AND WATER QUALITY

Mountain House Creek crosses the project site's western boundary approximately 500 feet downstream of the Canal 120 crossing. Within the project site, the creek channel is wide with banks typically less than three feet high. Levees have been constructed by the farmers to minimize bank overtopping. The Creek flows under BBID Canal 70 at the approximate center of the project site (Figure 4.7-1). Downstream of this crossing, Mountain House Creek has a poorly defined channel to Byron Road. The creek flow is conveyed under Byron Road through three 36-inch culverts and under the small trestle for the Southern Pacific railroad (Trimark Communities, 1990).

Downstream of Byron Road, Mountain House Creek flows through a narrow irrigation ditch to a dredged cut at Old River. No natural channel exists through this area. With irrigation ditches not able to contain storm water flows, the area north of Byron Road has flooded during prolonged storm events, most recently in 1982 (Trimark Communities, 1990). The terminus of Mountain House Creek at Old River consists of an 800-foot long dredged cut which serves to collect low flow from the creek. Water is pumped from the dredged cut and distributed by an irrigation system. Flow out of the cut is controlled by two 18-inch pipes into a channel connected to Old River. During dry periods, water is pumped from the channel to the dredged cut to supply irrigation water or is pumped from the channel into Old River. Levees contain the channel and pumping facility (Figure 4.7-1).

Dry Creek

A smaller creek, located parallel to and approximately 8,000 feet northwest of Mountain House Creek, traverses the northwest portion of the project site (Figure 4.7-1). This small creek is referred to as "Dry Creek" in a report prepared for the applicant (Trimark Communities, 1990). Dry Creek has a drainage area of about 6.8 square miles which extends into the foothills to the east. The natural creek channel has been significantly modified by agricultural practices downstream of the crossing of the Delta-Mendota Canal.

Dry Creek enters the project site near the creek crossing at Byron Road and the Southern Pacific railroad tracks, and flows under the road in a culvert. At Kelso Road, within the project site, Dry Creek is conveyed under the road by a culvert that was partially blocked with sediment and vegetation at the time of a site visit in January 1991. Wetland conditions have developed along Dry Creek upstream of the Kelso Road crossing, the result of ponding possibly caused by blockage or inadequate sizing of the culvert. Downstream of Kelso Road, Dry Creek flows in a modified channel to an irrigation pump station at the base of the levee along Old River. No outlet of the Dry Creek channel into Old River exists.

Internal Drainage

A network of numerous small ditches provides drainage of the interior of the project site. These ditches collect the majority of the site's surface water flow and also intercept shallow groundwater in some areas of the site. South of Byron Road, the majority of runoff is directed by the drainage ditches to three farm drains along Patterson Road and Byron Road (Figure 4.7-1). Only minor amounts of runoff are directed into the Mountain House Creek channel. Northwest of Mountain House Creek, the ditches discharge to a 24-inch farm drain which runs parallel to and southwest of Byron Road (Figure 4.7-1). Water collected in this "Byron

Road Drain" is pumped northwestward and discharged to the Delta-Mendota Canal, located approximately 1.5 miles northwest of the western boundary of the site (Figure 4.7-1).

Runoff from the area southeast of Mountain House Creek is directed eastward to two parallel farm drains, parallel to and west of Patterson Pass Road. The most easterly of these drains is buried at a shallow depth and drains through a culvert under Byron Road and the Southern Pacific railroad track. Runoff collected by this drain discharges into the drainage ditches which define the modified channel of Mountain House Creek north of Byron Road. The other farm drain is perforated pipe set at a greater depth. The pipe functions as a shallow groundwater drain which discharges collected water to the Byron Road Drain.

North of Byron Road, the farm fields are drained by ditches that direct runoff northward toward Old River. The runoff collects in ditches along the base of the Old River levee where collected water is pumped into Old River by four private pump stations (Figure 4.7-1).

Standing water was observed in January 1991 along the base of the levee along Old River. Because this observation was made during a protracted dry period and during a season when irrigation does not usually occur, the water probably represents seepage from beneath the levee. During irrigation periods, it is expected that irrigation tail-water (i.e., excess water which becomes runoff) also collects in the drainage ditches and at the base of the levee.

Flooding

Seasonal flooding is the natural process that has delivered and distributed the rich sediments of the Sacramento-San Joaquin Delta. In an effort to utilize this potentially productive agricultural resource, portions of the Delta have been "reclaimed" and protected from flooding by the construction of levees along major channels throughout the Delta. Levees within the Delta are constructed and maintained for Federal flood control projects ("project levees") or constructed and maintained by private landowners or local agencies ("nonproject levees"), such as reclamation districts. Flooding of the agricultural "islands" continues to occur as the result of levee overtopping during high flow periods and levee failure. Failure of nonproject levees is generally considered more likely because of the uncertainty in the quality of construction. In the period 1950 to 1987, at least 23 floods of Delta islands occurred. Fifteen were the result of levee failure and eight from levee overtopping (Logan, 1990).

Hydrostatic pressure is exerted on the levees by water within the channels contained by the levees. Increases in the level of water within the channel relative to the base of the levee causes positive pore water pressures within earthen fill of the levee. Positive pore pressures reduce the strength of the levee fill and raise the potential for failure. Subsidence of the organic soils of the Delta islands contributes to increasing the hydrostatic pressure. The water surface elevation in the channels is controlled by sea level and therefore would increase with increasing sea levels, a predicted consequence of global warming. The stability of Delta levees could be impacted by the raised water levels (Logan, 1990). Marginally stable levees may also fail

during moderate to strong groundshaking expected within the Delta during large earthquakes on active regional faults (Finch, 1985).

The northern portion of the project site is identified by the Federal Emergency Management Agency (FEMA) as being within the 100-year floodplain of Old River (Federal Emergency Management Agency, 1988) (Figure 4.7-1). The flood zone forms a band, approximately 1,500 to 2,000 feet wide, along the base of the levee at the north end of the project site. Although the levee provides flood protection for the site during lesser storms, potential failure or overtopping of the levee during a 100-year event is implied by the inclusion of this protected area in the flood zone. The northern portion of the site may also be inundated by flood waters generated by failure of the dams impounding New Melones and San Luis Reservoirs, large reservoirs outside the project area (San Joaquin County Office of Emergency Services, 1977).

The existing stream channels of the lower reaches of Mountain House Creek and Dry Creek, including areas within the project site, are not able to contain storm flows during intense precipitation periods. This problem has been exacerbated by increased sedimentation of these stream channels and their limited size in relation to the volume of water needed to be carried. The majority of runoff is currently conveyed by farm drains that prevent flow into the creek channels. The runoff is carried by the drains and removed from the site by pumps that direct the runoff to Old River and the Delta-Mendota Canal. Flooding occurred within the project site and along the base of the levee at Old River during storms in 1982, when runoff exceeded the pumping capacity of the existing pump stations. (Trimark Communities, 1990).

Subsurface Water

The project site is located on the western margin of the northern portion of the San Joaquin Basin, one of the largest groundwater reservoirs in California. The basin is filled with over 30,000 feet of sediments ranging from Jurassic (more than 144 million years old) to Holocene (less than 10,000 years old) in age. In the area of the project site, the most important water-bearing stratum ("aquifer") is the Tulare Formation. The Tulare Formation consists of interbedded Pleistocene (less than two million years old) gravel, sand, silt, and clay (Bartow, 1985). The coarser-grained deposits are the most significant source of groundwater supply in the Tracy area of western San Joaquin County. The aquifer yield to wells is typically greater than 1,000 gallons per minute (Page, 1986).

A prominent clay layer, the Corcoran Clay Member, separates an upper and lower water-bearing strata within the Tulare Formation. This clay layer, which is also called the "modified E clay", is encountered at a depth of approximately 200 feet and is about 80 feet thick in the area of the site (Page, 1986). Groundwater flow in the lower Tulare Formation is directed to the north-northwest (California Department of Water Resources, 1967), possibly influenced by recharge in the Sierra Nevada. The upper water-bearing zone is recharged by surface water infiltration in the foothills of the Diablo Range and groundwater flow is generally toward the north-northeast in the Tracy area (California Department of Water Resources, 1967; San Joaquin County Flood Control and Water Conservation District, 1988).

The depth to significant water-bearing zones, the direction of groundwater flow, and the potential aquifer yields in the area of the project are not well known. Available subsurface information suggests that the hydrogeologic conditions are complex in this area (Iwonima, 1991).

Water for irrigation is supplied by surface water sources rather than wells (Kaufman, 1991). Water supply for farms within the project site is provided by domestic wells. The wells probably draw water from the Tulare Formation as well as from overlying alluvial deposits. Groundwater has been encountered at shallow depths (4 to 16 feet below ground surface) in borings drilled at the site for geotechnical investigations (Earth Systems Consultants, 1990). The shallow groundwater is drained from the agricultural fields by farm drains to lower the groundwater level. Although the project is not located in an area recognized as a significant recharge zone (San Joaquin County, 1989), the shallow groundwater table is probably recharged from surface streams and overland flow during storms and irrigation periods.

The quality of the groundwater resources in the area of the project site is marginal. Water from wells in the area typically have relatively high total dissolved solids (TDS) concentrations (Miller, 1991). The high TDS is possibly related to salt water intrusion from the Delta or saline formation water. Relatively high concentrations of nitrates and sulfides have also been reported from wells in the area (Kaufman, 1991). High nitrate concentrations may be caused by livestock management at dairies or releases from household septic systems.

IMPACTS AND MITIGATION MEASURES

Significant impacts related to hydrologic conditions are those that: cause substantial flooding or erosion; substantially degrade water quality; contaminate a public water supply; or interfere substantially with groundwater recharge. Although the implementation of the project would result in a significant increase in impervious cover at the project site, groundwater recharge would not be significantly reduced because the area is mantled by low permeability soils.

Impact

4.7-1 Proposed structures and facilities on the project site could be inundated by potential flooding within the 100-year floodplain.

The 2,000-foot wide flood zone along the base of Old River levee is expected to be inundated by flood waters during a 100-year flood and possibly during the event of a dam failure outside and upstream of the project site. Flooding of the area may be caused by overtopping of the levee or levee failure. Levee failure could occur as the result of structural collapse of potentially weak sections of the levee during periods of high flow stages in Old River or during strong seismic shaking caused by a large earthquake on one of several regional faults. Proposed development within the flood zone includes residential uses in Phases II and IV (Figures 3.7 and 3.8). Flooding of this area could result in human injury and property damage.

The structural integrity of the nonproject levees along the project site's northern boundary is not known. It is not known if the levee has adequate freeboard (elevation) to prevent levee overtopping. An analysis of the proposed project's effect on the hydraulics of Old River estimates that additional runoff from the project could increase the 100-year flood stage (water surface elevation during flooding) in Old River by 0.3 feet (Appendix 10.12). Consultants for the applicant have suggested that flood protection within the project could be accomplished by raising the elevation of structures a minimum of one-foot above the 100-year flood elevation or improving the levees protecting the project site to meet the standards established by the FEMA Flood Insurance Rate Map (FIRM) program (Century West Engineering, 1991). In areas where structures are proposed within the 100-year floodplain, fill material would need to be imported to raise the existing elevation between one and nine feet.

Mitigation Measures

- 4.7-1(a) *The levees protecting the project site should all be thoroughly inspected, evaluated, and improved, as necessary, prior to any development within the portion of the site currently designated as a 100-year flood zone. The evaluation of the levee should be performed by a certified engineering geologist or registered geotechnical engineer prior to ~~completion~~ **approval** of the Specific Plan. All recommendations presented for levee design and improvements by the professionals should be implemented following review and approval by the San Joaquin County Flood Control Engineer. The review would be conducted under the FEMA requirements for the "Letter of Map Revision" process. ~~Areas currently within the 100-year flood zone cannot be rezoned until this area has been taken out of the flood zone. Thus, before the Specific Plan is approved, this levee work must be complete and approved.~~ **Prior to tentative approval of any discretionary or ministerial development applications north of Byron Road, the applicant should apply for and receive a "Conditional Letter of Map Revision" for proposed levee improvements. All levee work must be completed and approved and a "Letter of Map Revision" must be issued prior to any construction within the currently identified flood zone.***

Levee reconstruction or modification would require permits from the State Reclamation Board, U.S. Army Corps of Engineers (COE), U.S. Department of Fish and Game, and the California Department of Fish and Game.

- 4.7-1(b) *Regular inspection and maintenance of the levee should be performed to identify and correct any conditions that would destabilize the structure. The levee should be inspected semi-annually by the Community Services District (CSD) for the Mountain House New Town.*

The semi-annual inspections of the levee should specifically document evidence of erosion on the river side of the levee, excessive seepage on the landward slope (particularly at the toe of the slope), rodent burrows, and levee crest subsidence. Identified problems should be corrected immediately by the CSD.

Impact**4.7-2 Increased runoff within the watershed and channel modification of Mountain House Creek could result in increased erosion.**

Following project implementation, almost all runoff would be carried by Mountain House Creek to Old River. The existing estimated discharge during the 100-year, 24-hour storm delivered to the western margin of the site in Mountain House Creek is 1,300 cfs (Century West Engineering, 1991). This amount of water would also enter the site following project development. Development of the project would result in the construction of about 2,240 acres of impervious cover (R. W. Siegfried and Associates, 1991). The increases in impervious cover would result in an estimated discharge of 1,450 cfs in Mountain House Creek during the 100-year event (Century West Engineering, 1991) at the discharge point by Old River. The discharge rate would be controlled by a proposed system of detention basins, which is discussed in the Storm Water Drainage section of this DEIR (Section 4.4.3).

The applicant has proposed modifications of the Mountain House Creek channel that would include deepening and widening of the existing channel. The estimated runoff discharge from Mountain House Creek would be between 6.3 to 6.5 feet per second (fps), depending on channel geometry (Century West Engineering, 1991). The San Joaquin County Drainage Design Criteria set the maximum allowable flow velocity for channels in clay soils at 4.5 fps to minimize erosion hazards. Without channel bed stabilization or specific velocity dissipation design, erosion of the bed and banks of the Mountain House Creek channel would be expected. **Increased discharge and increased erosion would cause increased sediment loads in the Mountain House Creek and possibly destabilize stream banks and stream crossing structures.**

Mitigation Measures

4.7-2 *Although the applicant has presented preliminary design measures to reduce the erosion hazards, a specific channel design and maintenance plan should be prepared and presented in the Specific Plan. The specific channel design should incorporate riparian vegetation to the greatest extent possible. The design measures should also provide for protection of and any necessary improvements to existing culverts and stream crossings within the drainage system. The use of pervious pavements should be incorporated into the design of parking and pedestrian areas to increase infiltration of storm water runoff. The design and maintenance plan should present specific channel maintenance procedures and schedules to be implemented by the Community Services District to protect the channel and associated structures during and after the development of the project. The channel design and maintenance plan should be reviewed and be subject to the approval of the San Joaquin Flood Control Engineer.*

4.7 HYDROLOGY AND WATER QUALITY

Impact

- 4.7-3 **Increased sedimentation in the proposed wetland area at the terminus of Mountain House Creek and within Old River would be caused by runoff from Mountain House Creek and operation of the proposed marina.**

The proposed project would concentrate runoff into Mountain House Creek and allow direct discharge into Old River during high flow events. The runoff from the lower portion of the Mountain House Creek watershed during low flow events currently does not flow directly into Old River. The sediment load carried by the runoff is currently deposited in the drainage channel on the site and in fields where ponding of storm

4.7 HYDROLOGY AND WATER QUALITY

water occurs. Implementation of the project would result in increased discharges of storm water runoff and sediment load at the terminus area along Old River. Sedimentation would occur within an area which the applicant proposes to develop as a wetlands (see Open Space/Resource Conservation area east of Mountain House Creek in Figure 3.7). The sedimentation could adversely affect the proposed wetlands habitat.

During high flow events, sedimentation could possibly result in the formation of a sand bar in Old River at the discharge point of Mountain House Creek (Appendix 10.12). Formation of a bar would decrease the depth of Old River and possibly cause changes in the hydraulics of the river. The discharge of sediment-laden water would also result in localized increase in the turbidity (suspended sediment load) in Old River. The quality of water entering the Delta-Mendota Canal may be degraded by the increased turbidity. The canal supplies water for a large number of users throughout Central California.

Development of the proposed on-site marina could result in increased sedimentation in Old River. Shoaling at the outlet to marinas within the Delta is common. The rate of sedimentation is estimated to be approximately 0.5 feet per year (Appendix 10.12). Sediment accumulation would ultimately interfere with operation of the marina and could cause changes in the hydraulics of the river. It is expected that dredging may be necessary to remove accumulated sediment from the river. Suction dredging is commonly used for the expected scale of sediment removal. Increased turbidity during dredging could result in temporary degradation of water quality in Old River.

The dredged sediments may contain residual levels of salts, pesticides, herbicides, and metals. These materials have been used throughout the Delta for levee construction and other types of fill. These materials, if used in urban areas, could result in the exposure of people, particularly children, to health effects associated with the potential presence of toxins within the sediments. The disposal of dredged materials would be an impact of the dredging operation. A suitable disposal area would be required. The slurried sediments generated by suction dredging have in the past been applied directly to fields. Dredged spoils are commonly accepted by farmers to raise the elevation of fields. However, this farmland would be taken out of production during dredging for approximately one growing season.

Mitigation Measures

- 4.7-3(a) *Sediment discharge to Mountain House Creek should be controlled. Appropriate control of erosion within the project area, which would contribute to the sediment load, was discussed in Mitigation Measure 4.7-2. The discharge of sediment to Old River should also be minimized by causing sediment deposition to occur in areas within the Mountain House Creek channel. The Mountain House Creek channel should be enlarged upstream of the wetlands area to reduce flow velocities and cause sediment deposition. An appropriate channel design should be required as part of the Specific Plan and subject to review and approval by the San Joaquin Flood Control Engineer.*

- 4.7-3(b) *As part of the Specific Plan, a dredging plan should be developed for removal of accumulated sediment from the Old River channel in the area of the proposed marina outlet. This plan should be subject to the requirements of dredging permits issued by the U.S. Army Corps of Engineers and should have provisions for controlling turbidity during dredging. The use of silt curtains in the dredging area to capture sediments should be addressed in the dredging plan.*
- 4.7-3(c) *Prior to obtaining a dredging permit, a disposal area for the dredged sediments should be established by the applicant and approved by the Central Valley Regional Water Quality Control Board. The disposal area should be identified in the recommended dredging plan. The characteristics and design of the dredge disposal area should minimize the potential discharge of sediments to surface water and potential discharge of contaminants to the surface water or groundwater. A sampling plan to evaluate the potential levels of contaminants within the sediments should be incorporated in the recommended dredging plan. The collected samples should as a minimum, be analyzed for trace metals, salts, pesticides, and herbicides.*

Impact

- 4.7-4 **Inadequate water circulation would potentially create water quality problems within the proposed on-site marina.**

Modelling of water circulation within the proposed marina has indicated that the maximum residence time for water in the marina would be 10 to 12 days (Appendix 10.12). The relatively long residence time and low flow velocity within the marina could lead to stagnation and thermal stratification of the water. These conditions could cause prolific algal growth "blooms," particularly during summer and fall. The algal blooms would create increased marina maintenance requirements to control adverse odors and visual effects.

Mitigation Measures

- 4.7-4(a) *Circulation within the proposed marina should be adequate to reduce the potential for algal growth. A forced circulation system could pump water from Old River to the marina to mitigate thermal stratification and stagnation within the marina. A system capable of pumping 25 cfs would reduce water residence time in the marina to less than five days and reduce the potential for algal blooms (Appendix 10.12). A pipeline right-of-way from Old River to the southern portion of the marina would be needed to operate the recommended forced circulation system.*
- 4.7-4(b) *Operation of the forced circulation system should be made contingent on water temperature monitoring within the marina.*

4.7 HYDROLOGY AND WATER QUALITY

Impact

- 4.7-5 Water quality in Old River could be impacted by increased turbidity caused during construction of the proposed marina.**

The construction of the proposed marina would require excavation and construction of levees. If the construction area is opened to water flow from Old River, increased turbidity and sedimentation within Old River could be expected.

Mitigation Measure

- 4.7-5 The impact of construction activities at the marina could be mitigated by completing as much excavation and levee construction as possible prior to breaching the Old River levee. During levee breaching, a silt curtain should be installed within Old River to trap sediment carried into the river from the marina area.*

Impact

- 4.7-6 Ultimate development of the project site could cause a rise in shallow groundwater levels as a result of removal of subsurface drains.**

Groundwater levels throughout the project site range from 4 to 16 feet below the ground surface. The eastern farm drain along Patterson Pass Road is perforated and serves to locally lower groundwater levels. Removal of the drain during Phase IV of the project would result in a rise in the groundwater level. Higher groundwater levels could reduce the strength and increase the shrink-swell potential of soils underlying foundations and pavements. Other subsurface drains may also exist in other areas of the site and may be removed during project construction.

Mitigation Measure

- 4.7-6 The design of building foundations and pavements should consider the potential for adverse soil conditions caused by high groundwater levels. The designs should provide adequate drainage and require appropriate bearing capacities for proposed structures. The building, foundation, and pavement designs would be subject to review and approval by the San Joaquin County Building Department.*

Impact

- 4.7-7 Discharge of treated or untreated wastewater from the proposed project to Old River could result in degradation of water quality within the River and South Delta waterways system.**

The proposed project would include the construction and operation of a wastewater treatment facility in the northeastern portion of the project site. The current proposal for wastewater management is to maximize the use of reclaimed wastewater for irrigation and minimize the

discharge of wastewater to Old River. However, discharge of wastewater to the River may occur during rainy periods (November through April) when the need for irrigation water is reduced. The discharge of wastewater to the River would increase the level of plant nutrients and other water quality parameters in Old River and adjacent Delta channels. The water quality at the intakes for the Central Valley Project (CVP) and the State Water Project (SWP) could be degraded as a result of these releases.

Hydrologic modeling, prepared for this DEIR (Appendix 10.12), was performed to evaluate the effect of the discharge of treated wastewater into the river on water quality parameters. The model evaluated water quality effects on the existing South Delta conditions as well as under the preferred alternative offered by the South Delta Water Management Plan (DWR and USBR, 1990). The preferred alternative would include operation of a series of tide gates, including a gate on Old River at the northern boundary of the proposed project, which are designed to increase water surface elevations in selected channels within the Delta and add flexibility to the operation of the State Water Project (DWR, 1987). The modelling was also performed under assumptions for below normal and above normal annual flows for the period November through April.

A treated wastewater discharge of ten cubic feet per second (cfs) (6.5 million gallons per day) was assumed for the two-dimensional finite element model. The model assumed a minimum flow of 100 cfs in Old River would be necessary to cause a ten-to-one initial dilution of the wastewater. The results of the water quality modeling are presented in Appendix 10.12 of this DEIR. The change in the water quality parameters suspended solids, biological oxygen demand (BOD), total dissolved solids (TDS), and total nitrogen were computed for six selected locations away from the discharge point at the proposed project: 1) Old River one mile west; 2) Old River one mile east; 3) the CVP intakes at the DMC; 4) the SWP intakes at Clifton Court; 5) Old River at Tracy Road; and 6) Old River at Victoria Canal. The worst-case scenario for degradation of the water quality would be during below normal flows when tide gates would be closed on Old River.

The estimated average increases in water quality components during the worst-case scenario are presented in Tables 4 through 10 in Appendix 10.12. The modelling indicates that, as expected, water quality close to the discharge point ("near-field") would be more adversely impacted by wastewater discharges than more distant points ("far-field"). The modelling report (Appendix 10.12) concluded that the near-field impacts on water quality could be significant during low flow periods (less than 100 cfs) in Old River. The impacts of wastewater discharge on far-field points would be less significant but could include elevated nitrogen levels entering the CVP, potentially causing increased phytoplankton growth in the CVP's San Luis Reservoir.

Mitigation Measures

- 4.7-7(a) Additional on-site reclamation opportunities should be implemented to reduce the potential need for wastewater discharge to Old River.

- 4.7-7(b)** An off-site reclamation system should be developed that is sized to meet as much wastewater as possible up to the entire annual flow. Such a system should be identified in the Specific Plan for the project.
- 4.7-7(c)** If wastewater discharge were required, an application for the proposed discharge should be submitted for consideration by the Central Valley Regional Water Quality Control Board prior to project construction. The RWQCB should consider the potential near-field and far-field impacts on water quality and potential future changes in the South Delta waterways circulation system.

Impact

- 4.7-8** Increased boating within Old River and the South Delta waterways, expected as the result of the operation of the proposed marina would contribute to the erosion of levees by waves generated as boat wakes.

The operation of boats within the channels of the leveed channels of the South Delta waterways, such as Old River, create boat wakes. The waves of the boat wakes have sufficient energy to present a significant contribution to the processes that cause erosion of the levee slopes. Erosion of the levee slopes can potentially cause significant reduction of the stability of levees and increase levee maintenance costs.

Mitigation Measures

- 4.7-8(a)** The design of the levee improvements recommended in Mitigation Measure 4.7-1 should consider and mitigate the potential for all potential causes of erosion, including boat wakes. Possible design components for the prevention of erosion would include rock revetment structures, such as rip-rap. Specific design components for the erosion abatement should be required by the San Joaquin County Flood Control Engineer as a condition of levee design approval.
- 4.7-8(b)** To mitigate the impact of boat wakes on the stability of levees outside the control of the project, boat speed limits to reduce the generation of potentially damaging boat wakes should be established and enforced by the San Joaquin County Sheriff's Department, Boating Safety Division, in conjunction with other Delta area law enforcement agencies.

4.8 VISUAL QUALITY

SETTING

The project site is located at a major visual gateway to San Joaquin County along portions of I-205 and the County's western border. Rural agricultural images are the predominant visual characteristics of the project site, which has a level topography and limited built features. Long-distance views across open agricultural fields are dominant from a variety of local roads. These views include large expanses of sky and are occasionally interrupted by built features, such as fences, overhead electrical lines, and residences. Except for clusters of trees around on-site residences, tree cover is limited to the edges of roadways that create a visual corridor for the motorist.

Views from Public Roads

The project site is visible from a number of public roads that adjoin and/or pass through its boundaries. These roads include: I-205, Patterson Pass, Van Sostem, Grant Line, Byron, Kelso, Wicklund, and Henderson roads (Figure 4.8-1). None of these routes is a designated Scenic Corridor in the County General Plan (San Joaquin County, 1989).

The project site is visible from roads in the eastern, southern, and northern portions of the site (Figure 4.8-1). Close-up views of the western edge of the project are not possible from nearby public roads. Views from Patterson Pass, Byron, Kelso, and Grant Line roads are discussed in detail below, illustrated by photographs.

Views from Patterson Pass Road

Patterson Pass Road, a major two-lane arterial, forms the site's eastern boundary from which long distance views are possible looking west toward Mt. Diablo and the Mt. Diablo Range. From Patterson Pass Road, near the I-205 interchange, one can look west across a large agricultural field towards the foothills, with I-205 visible at the southern end of this viewshed (Figure 4.8-2A). At the southeastern corner, trees lining Patterson Pass Road limit views towards the site's interior (Figure 4.8-2B). At one point along Patterson Pass Road, where a major entrance to the project is proposed, an electrical transmission line creates a dominant foreground element (Figure 4.8-3C). At the northern end of Patterson Pass Road near Byron Road, one looks westward across agricultural fields on the site toward Mt. Diablo in the background (Figures 4.8-3D).

Views from Byron Road

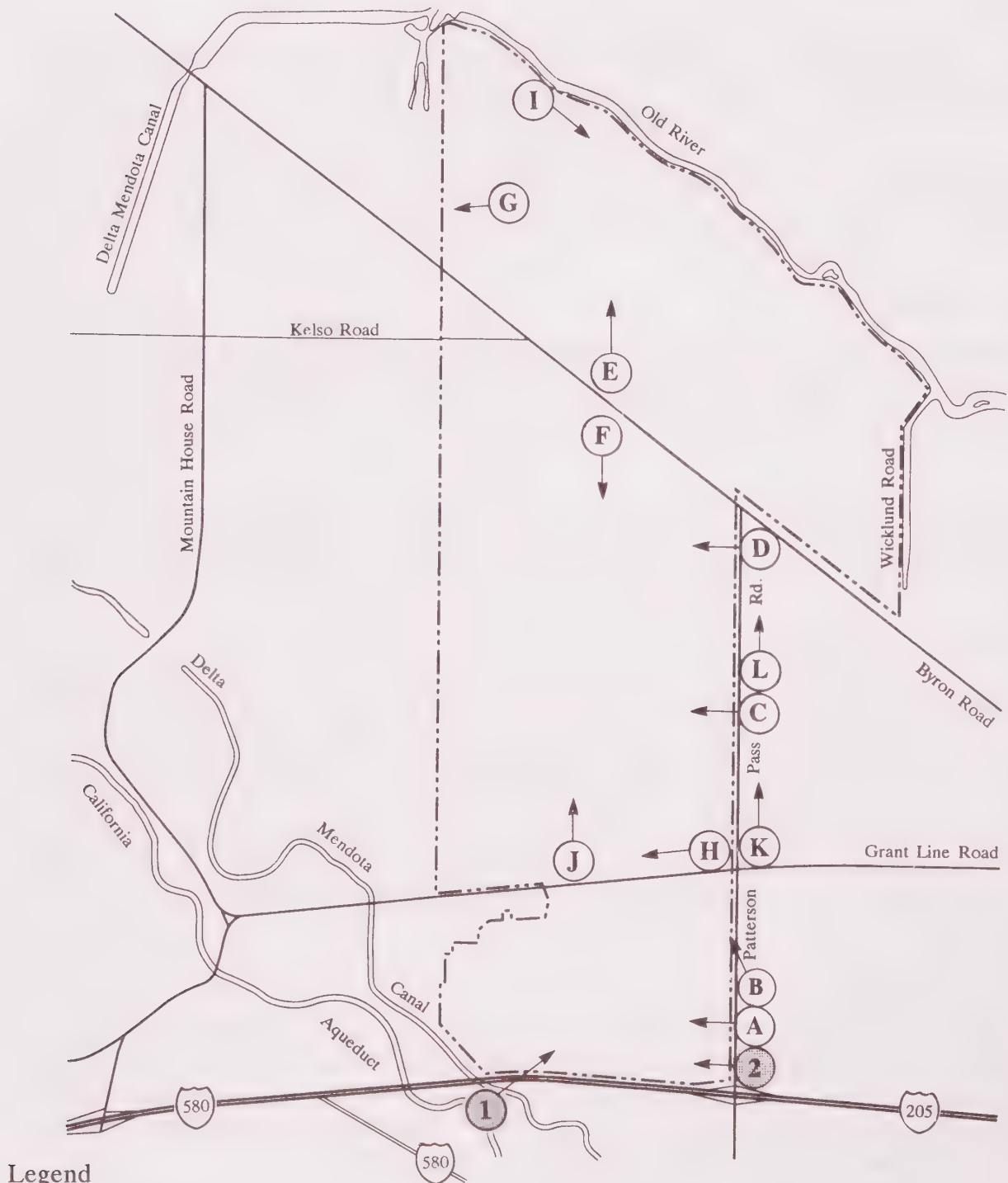
From Byron Road, a major two-lane arterial, views are available looking both north and south into the project site. When looking north, the Southern Pacific (SP) railroad line is a strong horizontal foreground element that partially screens agricultural fields in the background (Figure 4.8-4E). When looking south from this location, an abandoned agricultural field is visible in the foreground and windmills dispersed across the foothills near Altamont Pass are visible in the background (Figure 4.8-4F).

Views from Kelso Road

Kelso Road is a narrow two-lane road which crosses the northern portion of the project site and provides access to residences located along Old River. Kelso Road provides views west across an existing 10-acre wetland in the foreground toward Mt. Diablo in the background (Figure 4.8-5G).

PHOTO INVENTORY MAP

Figure 4.8-1



Legend

- (A)** → Locations of Photographs
(see Figures 4.8-2 through 4.8-7)
- (1)** → Locations of Two Photomontage Viewpoints
(see Figures 4.8-8 and 4.8-9)
- Project Site Boundary



BASELINE



A. View west across southern portion of site from Patterson Pass Road showing I-205 to the south and foothills in the background.



B. View of southeastern edge of site looking northwest from Patterson Pass Road near the I-205 interchange.



C. View west across site from Patterson Pass Road near a proposed major project entrance. An electrical transmission tower forms a dominant foreground element.



D. View west across site from Patterson Pass Road where it intersects Byron Road. Mt. Diablo forms the background to agricultural fields.



E. View north from Byron Road across railroad tracks.



F. View south from Byron Road to foothills in the background where numerous windmills are located.



G. View west from Kelso Road across on-site wetlands, with foothills visible in the background.



H. View west from Grant Line Road near its intersection with Patterson Pass Road.

Views from Grant Line Road

Grant Line Road, a major arterial, which crosses the southern portion of the site, provides open views to both the north and south. Near its intersection with Patterson Pass Road, the view is partially framed to the south by a continuous row of deciduous trees that line Grant Line Road (Figure 4.8-5H). An agricultural field and distant foothills can be seen to the north from this viewing location. At the eastern edge of the site are uninterrupted views northward from Grant Line Road (Figure 4.8-6I). Looking south from this same location, a number of existing scattered residences are visible.

Views from Areas Near Waterways

Waterways are a major scenic and recreational element in San Joaquin County. Old River is a major scenic element at the northern edge of the project site, used by boaters, fishermen, and waterskiers (Figure 4.8-1). Another major waterway just west of the project site is the Delta-Mendota Canal (Figure 4.8-1). Both of these waterways are protected by levees that limit views of the water to the immediately adjacent area.

The levee adjacent to Old River is accessible from Kelso Road. At this location, one can look out over large areas of the site due to the elevation of the levee which is approximately 12 feet above surrounding areas (Figure 4.8-6J). Thick riparian vegetation along the banks of the river forms a strong visual element that contrasts with the smooth water surface.

Visual Quality of Area Surrounding the Project Site

The area surrounding the project site is visually very similar to the project site in terms of large agricultural fields and two-lane rural roads, as shown in aerial photographs (Figures 3.3 and 3.4) and in photographs taken along Patterson Pass Road (Figures 4.8-7K and 4.8-7L). Visible built features of the surroundings include rural residences, roads, and electrical transmission lines. A significant cluster of windmills is located to the west of the site, along the foothills.

IMPACTS AND MITIGATION MEASURES

The CEQA Guidelines indicate that a project will normally have significant adverse visual impacts if it would have a substantial, demonstrable, negative aesthetic impact. This determination is based on several criteria, including observer position, view corridors, existing and proposed screening, backdrop, and characteristics of the proposed development. The existing visual character of the surrounding area is also taken into account in applying this definition. No quantitative method for assessing visual quality and aesthetic impacts exists; accordingly, judgements of the significance of a particular effect may be expected to differ among viewers.

Factors to be considered in identifying potentially significant visual impacts include: development that blocks existing significant public views and view corridors; substantial inconsistency with the character, scale, massing, bulk and form of surrounding development; substantial terrain modifications; reductions in sunlight or creation of shadows in areas used extensively by the public; and substantial increase in nighttime light levels and glare.

VIEWS OF PROJECT SITE

Figure 4.8-6



I. View to the north from Grant Line Road near the center of the site.



J. View toward Old River and the northern edge of the site from a levee adjacent to Kelso Road.

VIEWS OF PROJECT SITE AND ADJOINING LANDS

Figure 4.8-7



- K. View north along Patterson Pass Road from Grant Line Road. An on-site dairy is visible on the west while off-site agricultural fields can be seen to the east.



- L. View north along Patterson Pass Road near a major entrance proposed for the project. Agricultural fields on the east and west sides of the road are visible, with overhead electrical transmission lines forming a strong visual element.

4.8 VISUAL QUALITY

For this analysis, views are determined by visual access to an important element or elements in a viewshed. A viewshed often includes a wider range of visual elements and a more general perspective than does a view corridor. At the project site, viewsheds are more prominent than view corridors that require strong building or landscape edges to define the corridor. Potential visual impacts are determined with regard to places of public access (e.g., open space and roadways) rather than private locations or buildings.

Impact

4.8-1 The proposed project would replace a 4,667-acre agricultural portion of San Joaquin County with a built environment, and would significantly alter the existing rural visual quality of the site as seen from local roads.

The proposed project would result in the construction of new buildings in the foreground of many views of the site, as seen from public roads such as Patterson Pass Road, Grant Line Road, and Byron Road. The new buildings could range in height from 25 to 100 feet (see Impact 4.8-2, discussed below, regarding building heights). No landscaping plans have yet been prepared that would show where tree cover might screen new buildings and create the boundaries for view corridors. The only proposed open space corridor adjacent to a roadway is that proposed adjacent to I-205 at the southern portion of the site (Figure 3.7).

From I-205, the project would be the first urban development visible to motorists driving east toward Tracy and Stockton. As it is located on the County line, the proposed development adjacent to I-205 would create the northern half of the "gateway" to San Joaquin County. The southern half is currently, ~~and is expected to remain,~~ in agricultural use. The Delta-Mendota Canal and the California Aqueduct are major visual features at this southern side of the gateway for eastward bound motorists on I-205.

To evaluate the visual character of the project site at full buildout, photomontages have been prepared from two viewpoints. Certain assumptions were made in producing the photomontages for the project. It was assumed that low-density residential buildings would be approximately 3,000 square feet in size, to cover 30 percent of each allowable lot, and that 30 percent of gross acreage would be used for roads and other open space. Industrial buildings were assumed to be approximately 100 feet by 100 feet for a total building footprint of 10,000 square feet. Each industrial building was assumed to be built to the maximum allowable height of 100 feet for a worst-case analysis.

The view northeast from I-205 currently takes in a large agricultural field in the foreground, crossed by a major electrical transmission line with towers that break the horizon (Figure 4.8-8A). A scattering of rural residences can be seen in the background of this view. A photomontage prepared for this location depicts proto-typical buildings that would replace the open expanse with a multitude of built structures (Figure 4.8-



(a) Panoramic view across southern portion of project site from I-205. A major electrical transmission line crosses the level agricultural field, while rural residences are visible in the background. The Delta-Mendota Canal is visible in the foreground.



(b) Photomontage of proposed project which illustrates prototypical development that would be visible from the same viewpoint shown above. Residential structures would be partially screened by a noise wall. Industrial buildings which could be 100 feet tall are visible in the background.

8B).¹ Proposed two-story residential buildings, shown in the photomontage, would be partially screened by a noise wall along I-205 (Figure 4.8-8B). The residential buildings in the foreground would be located at a lower elevation than the freeway due to the low elevation in this portion of the project site. The background to these residences would include industrial buildings that could be up to 100 feet in height. The photomontage illustrates that even the 100-foot tall buildings in the background do not break the horizon line as do the electrical transmission line towers. However, the overall image is one of hard surfaces and a cluster of rooftops from this particular location. Views of development are not screened by any landscaping or setbacks, as shown in this photomontage. However, screening of residences by trees could occur in an open space corridor proposed adjacent to I-205 (Figure 3.7).

From Patterson Pass Road at the northern end of I-205 interchange, development of the proposed project would also replace a large expanse of agricultural lands (Figure 4.8-9A and 4.8-9B). As seen from this location, commercial buildings could dominate the foreground of this view from Patterson Pass Road. Roadway signs associated with freeway commercial uses would also dominate this view and partially block views of the foothills in the background. Without controls on the size and height of signs, these signs could be dominant visual elements in the view corridor.

The Draft Development Title of the County's Draft Comprehensive Planning Program (San Joaquin County, 1991d) includes regulations regarding signs. For Freeway-Service Commercial (C-FS) districts, comprehensive sign plans would be required, as stated in section 9-1710.3 of the Draft Development Title. Pole signs would not be allowed to exceed 40 feet in height and 75 square feet in sign area per face for existing developments in C-FS districts. No limitations have been identified for proposed development other than the requirement for a comprehensive sign program.

Views from existing roads such as the northern portions of Patterson Pass Road, Grant Line Road, and Byron Road would include close-up views of buildings at the road edge due to the site's level topography. No landscape plans for these edges have been proposed. The only proposed open space that would be visible from an existing roadway, would be a narrow band of open space proposed to cross Byron Road (Figure 3.7).

Mitigation Measures

- 4.8-1(a) *A major visual setback should be provided to maintain an agricultural gateway to San Joaquin County for motorists driving along I-205. Development south of Grant Line Road could be limited to a band extending approximately 3,000 feet south of the road (Figure 4.8-10). Development within this band should also be screened by a continuous row of evergreen trees*

¹The photomontages (Figures 4.8-8 and 4.8-9) have been prepared by a process of three dimensional computer modeling and digital super-positioning (photomontage) to approximate the visual density and noise at full buildout of the proposed land use plan for the Mountain House New Town. Large format field photography was acquired from the view positions in March and July 1991. A computer graphic model of key front-line structures was constructed and digitally inserted into the field photography. Photographs of structures approximating the size and height of those indicated by the computer model were inserted over the computer model to complete the simulations.

PHOTOMONTAGE OF PROPOSED PROJECT: PATTERSON PASS ROAD

Figure 4.8-9



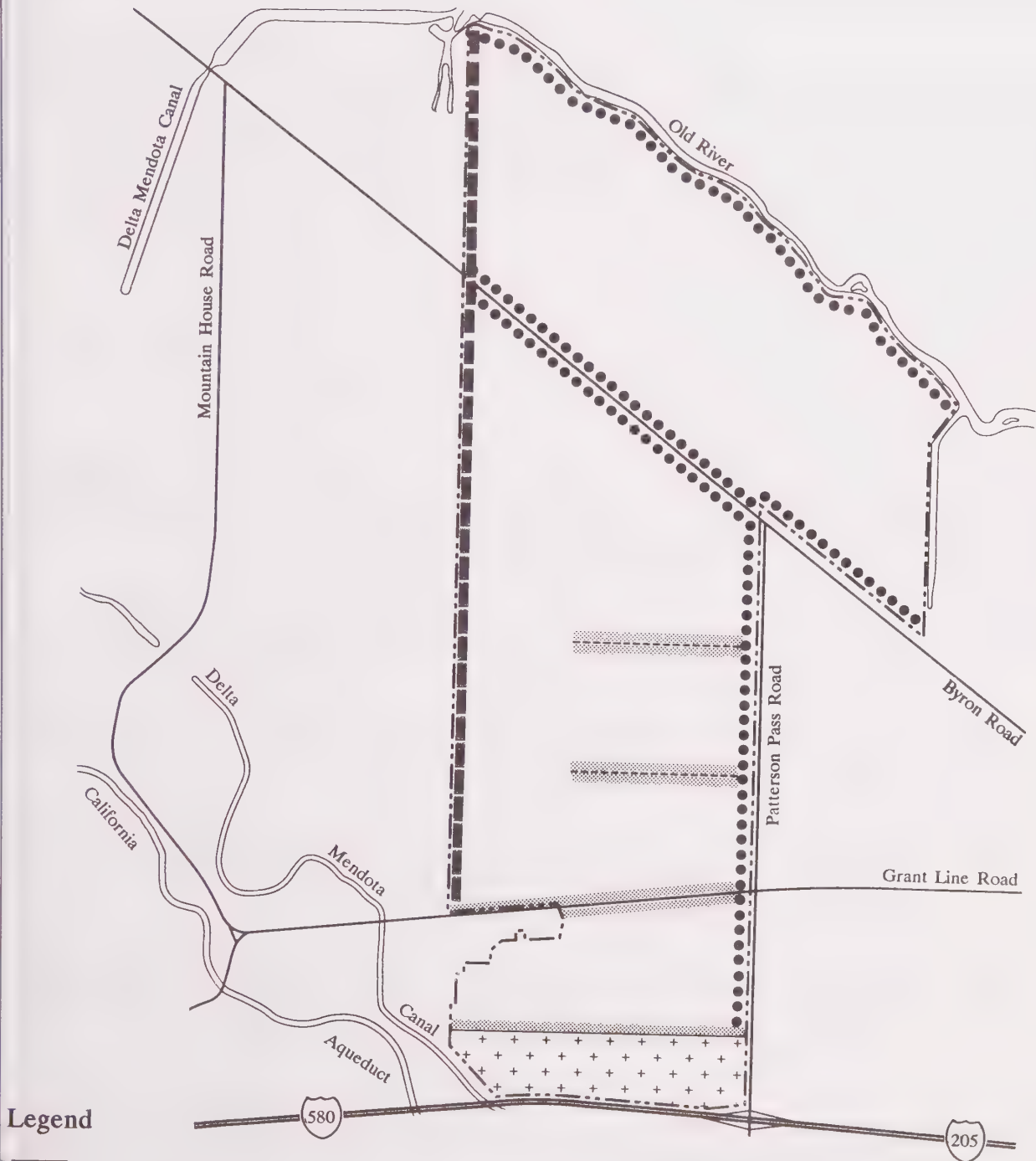
a) Panoramic view across southern portion of project site, looking west from Patterson Pass Road near its intersection with I-205. Mt. Diablo foothills form the background to agricultural fields.









b) Photomontage of proposed project which illustrates prototypical development that would be visible from the same viewpoint shown above. Freeway service commercial uses would form the foreground of this viewshed.

RECOMMENDED SETBACKS AND LANDSCAPE SCREENING

Figure 4.8-10



Legend

-  Recommended Setback from I-205
-  Recommended 25-Foot Wide Landscape Screening
-  Recommended 50-Foot Wide Landscape Screening
-  Recommended 50-Foot Open Space Corridor
-  Proposed East-West Minor Arterials
-  Project Site Boundary



The recommendations are for potential visual impact mitigation only.

10/23/91

BASELINE

at the southern end of the development. A permanent open space easement could be acquired to protect this southern portion of the project site that would be visible from I-205 (Figure 4.8-10). This development setback would also have the added benefit of reducing noise impacts from I-205. The applicant could purchase a conservation easement (i.e., voluntary restriction of land use to agricultural purposes) using the San Joaquin Open Space and Farmland Trust. The land could remain in private ownership and agricultural production, with deed restrictions to prevent future development.

- 4.8-1(b) *The Specific Plan should identify all techniques proposed to minimize the visibility of urban development south of Grant Line Road. Such techniques could include building setbacks, landscape screening, use of berms, fencing, and low building heights.*
- 4.8-1(c) *To maintain the rural character of the surroundings, additional landscaping with evergreen trees should occur along the existing major roads, which include Patterson Pass Road, Byron Road, and Grant Line Road (Figure 4.8-10). These trees should be planted so that the canopies of the trees touch one another at maturity and form a solid edge along the roads.*
- 4.8-1(d) *Additional screening by trees should be provided along Old River and a small waterway adjoining Old River at the site's northeast corner (Figure 4.8-10). Along Old River, the landscaped area should be planted with species of trees and shrubs compatible with existing riparian vegetation. Species should also be chosen to provide effective screening so that the public using the levees for walking or bicycling would have a limited view of development on site. Similarly, at the small waterway, riparian landscaping should be provided.*
- 4.8-1(e) *Landscaping plans should be clearly identified in the Specific Plan for both existing and proposed roadways. Such plans should be used by a design review committee established for this project and responsible for design review prior to construction.*
- 4.8-1(f) *The Specific Plan should include a comprehensive sign program for the proposed C-FS district which would limit pole signs to a single identifying sign for the FS area; height and size restrictions should be imposed where feasible to lessen the visual impact.*

Impact

- 4.8-2 **Views from public roads toward Mt. Diablo and the Mt. Diablo foothills to the west of the site would be screened by new buildings.**

Views of these hills are now possible from Patterson Pass Road, Grant Line Road, and Byron Road as well as from other existing minor on-site roads. These hills form the backdrop to open agricultural fields and provide a sense of distance for the viewer. New development along these roads would significantly interrupt these views. An example of such a view interruption is shown in Figure 4.8-9B.

Mitigation Measures

- 4.8-2(a) *View corridors towards the foothills and Mt. Diablo should be protected and enhanced by the incorporation of east-west vehicle and pedestrian corridors throughout the project site. These corridors should be landscaped with trees to frame views to the west, and should be at least 40 feet wide to allow open views (Figure 4.8-10).*
- 4.8-2(b) *An open space corridor along the project's western edge should be incorporated into the project. Although access should be controlled to minimize trespassing onto adjacent agricultural lands, this area could provide significant views of the hills without the interruption of buildings (Figure 4.8-10).*
- 4.8-2(c) *Sign regulation should occur as discussed under Mitigation Measure 4.8-1(f).*

Impact

- 4.8-3 **Industrial buildings along major view corridors could be as tall as 100 feet. Such buildings would create a dominant visual feature in areas that: 1) are not intended as the commercial centers of the project; 2) would contrast significantly with adjoining agricultural lands; and 3) would severely limit views for the motorist. Residential areas proposed adjacent to on-site open space would allow buildings up to 76 feet in height, which would create a strong visual contrast to the open space and also generate long shadows.**

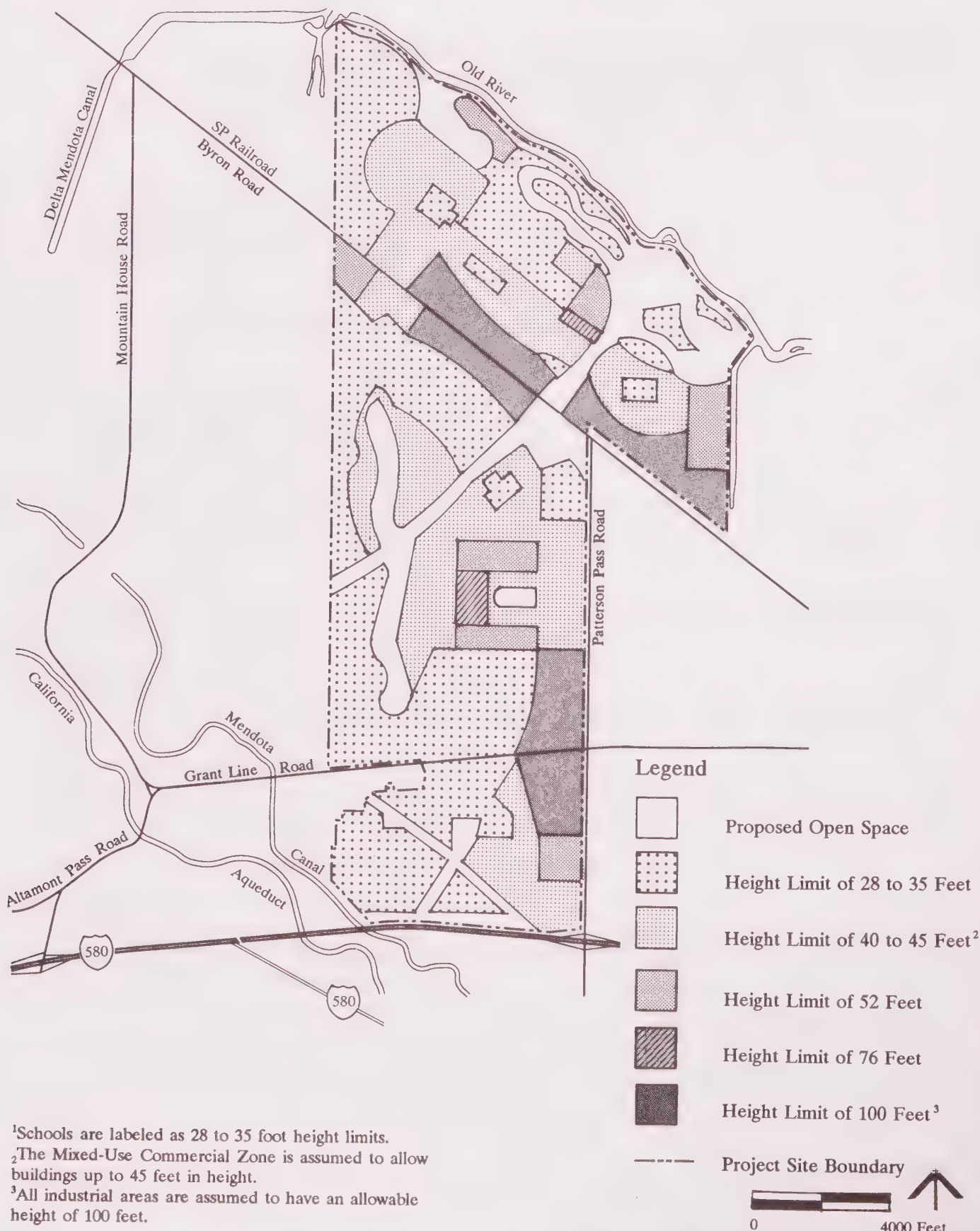
As proposed in the Revised Draft Development Title of San Joaquin County (1991b), industrial buildings may be allowed to be up to 100 feet in height. The proposed project would include significant areas of such industrial uses along Patterson Pass Road and Byron Road (Figure 4.8-11). These areas are not within the commercial centers of the project, yet would be visually prominent to motorists on Patterson Pass and Byron roads. These two major arterials are significant visual access routes to the project.

The proposed industrial areas would also be located immediately adjacent to Low and Medium Density Residential zones where maximum height limits would not exceed 40 feet (Figure 4.8-11). Industrial buildings of up to 100 feet in height could shade residential yards and buildings and create a significant visual contrast with adjoining residential neighborhoods.

Industrial buildings would be located adjacent to proposed on-site open space and agricultural lands where the visual contrast of 100-foot buildings would be significant. Within the site, an open space corridor north of Byron Road would be in the middle of two industrial districts (Figure 4.8-11). Industrial areas on the north side of Byron Road (northeast corner of site) and on the east side of the site by Grant Line Road (Figure 4.8-11) would be immediately adjacent to extensive agricultural lands, separated only by roads. Buildings up to 100 feet in height adjacent to Patterson Pass Road would also severely restrict motorists' views westward towards the foothills.

POTENTIAL HEIGHTS FOR BUILDING ZONES

Figure 4.8-11



¹Schools are labeled as 28 to 35 foot height limits.

²The Mixed-Use Commercial Zone is assumed to allow buildings up to 45 feet in height.

³All industrial areas are assumed to have an allowable height of 100 feet.

Note: Neighborhood parks less than 10 acres are not shown.

Medium-High Density Residential zones adjacent to the on-site proposed marina and Old River could have buildings up to 52 feet in height (Figure 4.8-11). Buildings of this height in that area could create a strong visual contrast for users of the open space. Open space north of Byron Road could adjoin buildings within the High-Density Residential area up to 76 feet in height (Figure 4.8-11), which would create a strong visual contrast to the open space and which could result in shading of public use areas during the afternoon hours. During hot summer days, such shading may be appropriate but should be provided by tree cover rather than buildings; deciduous trees could be planted so that during winter months, solar access would be available.

Mitigation Measures

- 4.8-3(a) *The maximum allowable height limit for industrial areas should be reduced to 45 feet or less to prevent this land use from being a dominant visual feature of the proposed project, especially when adjacent to residential neighborhoods or open space (Figure 4.8-11).*
- 4.8-3(b) *Industrial buildings should be set back at least 30 to 40 feet from roadways and should incorporate evergreen tree cover adjacent to the roads, especially when adjacent to agricultural lands.*
- 4.8-3(c) *Industrial buildings adjacent to residential neighborhoods should be set back at least 100 feet from residential lots. Evergreen tree cover should screen industrial buildings from residences.*
- 4.8-3(d) *The Medium-High Density Residential area proposed adjacent to the marina should have a height limit of 40 feet or less.*
- 4.8-3(e) *The High Density and Medium-High Density Residential areas just west of the open space corridor on the north side of Byron Road should have a height limit of 40 feet or less.*

Impact

- 4.8-4 **Project development could result in the removal of mature trees currently visible from public roads, which frame views along these roads.**

Few natural or visibly-significant features (e.g., riparian vegetation or historic structures) within the site are now visible from public roads. However, some roads do include a continuous row of mature deciduous trees that line the roads (Figures 4.8-2B and 4.8-5H). These trees could be removed as part of project construction, especially if roads are widened to accommodate the project (see Section 4.14)

Mitigation Measures

- 4.8-4(a) *Any required road widening should include protection of mature trees. For example, when trees are located along the west side (e.g., Patterson Pass Road) or south side (e.g., Grant Line Road), the area used for road widening should be the east or north sides, respectively.*

- 4.8-4(b) *The Specific Plan should include mapping of all mature on-site trees visible from existing and proposed roads. Provisions to protect existing mature trees, **except those that may be unsafe due to age or overall conditions**, should be included in the Plan.*

Impact

- 4.8-5 **The project could generate light and glare which would be visible from major roads, residences within the project, and residences outside the project.**

Light and glare could be created throughout the project site by lighting of parking lots, playing fields, industrial/business park areas, interior building lighting, and the use of exterior building materials which could be reflective.

Mitigation Measure

- 4.8-5 *The Specific Plan should include specific descriptions of how light and glare from the project would be minimized. Mechanisms such as screening of parking areas with evergreen trees, setbacks from residential neighborhoods adjacent to commercial areas, and a design review process should be included in the Specific Plan. The design review process should include review of lighting proposals and architectural materials. A design review committee made up of both architects and landscape architects should oversee the design review process.*

4.9 FISCAL IMPACTS

SETTING

This section examines the potential effect that development of the proposed project would have on public service expenditures and revenues. The objective of the analysis is to determine whether the costs associated with providing on-going services to the residents and businesses within the New Town would exceed the public revenues that residents and businesses would generate. For this reason, the fiscal impact analysis examines annually-recurring costs and revenues. The following section (4.10) of this report explores the financial implication of the one-time capital costs associated with the proposed New Town. The study period for the fiscal analysis covers the years 1993 through 2010, the latter being the year when the project applicant anticipates the New Town would have achieved buildout.

Relevant County Services

If approved for development, the Mountain House New Town would initially be an unincorporated community, with services provided by the County and by special districts. Although at some point in its evolution the New Town could incorporate, thus taking direct responsibility for service provision and removing some of the cost burden from the County, there is no certainty as to when, or even if, incorporation would occur. This fiscal impact analysis therefore assumes that if the project incorporates, it would be at a date after the year 2010.

County-provided services would be financed through the County's General Fund, the Library Fund, and the Road Fund (with supplemental revenues provided by Road District No. 5). Educational services would be financed by the Tracy Public School District, which is inclusive of the Lammersville Elementary School District (LESD) and the Tracy Joint Union High School District (TJUHSD). Fire protection would be financed, at least initially, through the Tracy Rural Fire Protection District.

The project applicant is, in addition, proposing that a Community Services District (CSD) be formed to finance certain services for which the County would typically be responsible but which would require a higher than normal standard of delivery given the urban character of the New Town. These services include law enforcement, fire protection, CSD administration, planning/engineering and development review, animal control, park maintenance, recreation services, water, and sewerage (Table 4.9-1). Trimark is proposing that these services be financed, in all or in part, through a reallocation of property tax revenue.

Development of the Mountain House New Town would also generate costs and revenues for the following agencies: San Joaquin Delta Community College, Tracy Cemetery District, San Joaquin County Mosquito Abatement District, Westside Irrigation District, and Byron-Bethany Irrigation District. Fiscal impacts to these agencies have not specifically been analyzed because property tax revenues are expected by the DEIR authors to outweigh potential service costs.

Overview of County Services

The services provided by the County are: 1) services that benefit all residents of the County and which are not provided by existing municipalities, and 2) municipal-type services (e.g., police protection) that are provided only to the residents and businesses within the unincorporated area. These two types of services

4.9 FISCAL IMPACTS

TABLE 4.9-1

SERVICE PROVIDERS PROPOSED BY APPLICANT FOR MOUNTAIN HOUSE NEW TOWN

Service	Service Providers			
	County Government	CSD or CFD ¹	Other Existing District	Private Organization
<u>General Governmental</u>				
Administration of District program		X		
Finance/risk management		X		
Other (e.g., clerk, personnel)	X			
<u>Law Enforcement</u>				
Administration	X			
Police patrol		X		
Investigative		X		
Traffic control		X		
<u>Fire Protection</u>		X		
<u>Community Development</u>				
Administration	X			
Land use planning		X		
Building inspection		X		
<u>Public Works</u>				
Administration	X			
Street maintenance		X		
Street lighting		X		
Street cleaning		X		
Engineering		X		
<u>Water</u>		X		
<u>Sewerage</u>		X		
<u>Solid Waste</u>				X
<u>Parks and Recreation</u>		X		
<u>Library</u>		X		
<u>Education</u>				
Lammersville Elementary School District			X	
Tracy Joint Union High School District			X	

¹ A CSD is a Community Services District, and a CFD is a Community Facilities District. These districts could contract for services from the County or provide these services themselves.

Source: Trimark Communities, Inc., 1991; Economic and Planning Systems, Inc.

can be classified into three categories based upon legal requirements: 1) mandated services, 2) County-responsibility services, and 3) discretionary services (Table 4.9-2). Approximately 90 percent of the County's total operating costs consist of mandated services and County-responsibility services (San Joaquin County, 1991a). The major portion of these costs is for social services and County administration.

The County relies extensively on State and Federal revenue transfers to finance many of its mandated services. However, this aid has not kept pace with cost increases over the last several years (Economic and Planning Systems, 1989). The continuation of even existing levels of intergovernmental aid is problematic given the continued likelihood of budgetary deficits at the State and Federal levels.

Expenditures that are not offset by government aid or service charges are financed solely by the County's general revenues, derived from such sources as property and sales taxes. As a result of the rising cost of countywide services and of declining State and Federal aid, the County has increasingly had to rely on its general revenues to ensure adequate service levels. A study prepared two years ago noted that "if historical growth trends continue . . . non-discretionary services will require 100 percent of general revenues, leaving no funds for

TABLE 4.9-2

COUNTY SERVICE FRAMEWORK

Legal Requirements (statutory classification of the County's service levels and costs)	Service Classifications	
	Countywide Services (social and administrative services for all County areas)	Urban Services (services for unincorporated areas)
Mandated Services (These services and service levels are mandated by State and Federal law)	Public welfare Social services Courts County jail	
County Responsibility Services (These services are required by State law without service levels defined)	Public health Administration Coroner Public administrator Agricultural commissioner Assessor Tax collector Recorder District attorney	Police services Road maintenance Engineering Animal control Planning Building inspection
Discretionary Services (These services are not required by State law)	Regional parks Library ¹	Local parks ¹ Recreation programs Water service ¹ Sewer service ¹ Drainage/flood control Fire ¹ Street lighting ¹

¹ These services are provided through County-dependent or independent special districts.

Source: Economic and Planning Systems, Inc., 1989.

discretionary services (such as parks and recreation) or capital improvements" (Economic and Planning Systems, 1989). The increased burden of countywide service costs will correspondingly diminish the County's ability to provide urban services to unincorporated areas.

IMPACTS AND MITIGATION MEASURES

For purposes of this DEIR, significant impacts are defined as service costs that exceed revenues generated by development at the project site.

Summary of Methodology

This fiscal impact analysis examines the potential service needs of the Mountain House New Town and translates these needs into costs that would be incurred by the County and by special districts. These service costs are then balanced against the public revenues that the proposed project would generate. A revenue surplus indicates a positive fiscal impact, while a revenue deficit indicates a negative fiscal impact for which either a compensating source of funding would have to be found or service levels reduced elsewhere in the County. Revenue and expenditure estimates based on previous County experience are used as the basis for projecting the fiscal implications of future development. The evaluation of potential impacts is based on the following analytical procedure:

1. Identification of the public services and revenues that would be provided to the proposed development and an estimate of their current levels. This step entails the review of budget documents and interviews with service and finance personnel.
2. Translation of current revenue and expenditure levels into per-unit averages (e.g., per capita or per acre) or, if possible, more precise increments that better reflect how an agency's operations change as a city grows.
3. Projection of the public revenues and service costs generated by the proposed project by applying either the per-unit averages or the incremental estimates to the project description. Interviews with service personnel are used to provide elaboration, if necessary.
4. Comparison of the projected costs and revenues to determine net fiscal impact.¹ Impacts are presented on a year-by-year basis.

The public service impacts that are presented in the Public Services section of this DEIR (Section 4.3) provide a basis upon which to project the costs that the County would incur should the proposed project be

¹In some cases, cost and revenue changes are projected based on a more complex set of interactions than might be reflected through the application of per capita or per dwelling unit multipliers. For example, the property tax submodel projects changes in property tax revenues based on the assessment restrictions that were enacted through Proposition 13, the value of new development, and assumptions about the rate of property resales.

approved, constructed, and occupied. In addition, other services and recurring expenditures that were not discussed in the Public Services section are examined and quantified in this fiscal impact analysis.

Major Assumptions

The projection of development-related fiscal impacts entails a certain amount of imprecision; the methodology used in this report, therefore, uses a conservative approach by applying methods and data that may underestimate revenues and overestimate costs. For example, County administration costs are assumed to increase proportionately with population growth; in reality, these costs tend to rise on a less-than-proportional basis. All costs and revenues are presented in constant Fiscal Year (FY) 1991-92 dollars, which facilitates comparisons between cost and revenue streams throughout development of the Mountain House New Town.

The phasing schedule of development was prepared by the project applicant, who anticipates that buildout of the New Town would occur by the year 2010.² To develop so rapidly, however, would require rates of construction and levels of market penetration that have little precedence in the San Joaquin Valley (Economic and Planning Systems, 1991). The fiscal impact analysis of the proposed project therefore examines the potential effects of the applicant's expectations regarding rate of development, which may or may not prove true.³ An additional analysis has been performed to explicitly examine the implications of a reduced rate of commercial and industrial development. Also, the Reduced-Scale Project Alternative presented in this EIR (Section 5.6) can be considered a proxy for evaluating the fiscal effects of a slower rate of growth.

From the perspective of the County taxpayer, the fiscal impacts of primary importance are those that recur on an annual basis and that are financed in whole or part by tax revenues. Accordingly, this analysis excludes the following: 1) one-time revenues, such as for building permits, that are specifically intended to offset the County's processing/service costs and thus generally have a neutral fiscal impact; 2) the one-time costs covered by these one-time revenues; 3) expenditures for infrastructure, which will be discussed in the Financial Impact section of this DEIR (Section 4.10); 4) capital expenditures that are financed through development fees which, as a result of Assembly Bill 1600, are intended to balance each other; and 5) programs that are self-financed through enterprise funds.

²This buildout schedule differs slightly from the buildout schedule applied in the transportation analysis (Section 4.14) in that the fiscal analysis assumes buildings are occupied the same year they are built (there is no compelling reason to assume otherwise).

³See Section 4.11 for a discussion regarding market demand for proposed New Town land uses.

Revenues

Property Tax

Real property is taxed at a maximum rate of one percent of assessed value (excluding increments for bond financing), which is divided among different taxing agencies through the application of tax allocation factors. The County General Fund receives approximately 45 percent of the property taxes generated by increases in assessed valuation at the project site. Other funds and service entities that are allocated property tax revenue include the Library Fund, the Road Fund (via Road District No. 5), the Tracy Rural Fire Protection District, and the local school districts.

Under Proposition 13, the assessed valuation of any individual property is set at fair market value when the property is developed or sold. The assessed value then increases at a rate of no more than two percent per year unless the property is again sold or substantially improved, at which point it is reassessed to current market value. The analysis presented in this report conservatively assumes that market value appreciates at a rate that is only one percentage point above the assumed rate of inflation (five percent per year). This assumption reflects the large amount of residential development proposed for San Joaquin and eastern Alameda counties, which represents a substantial increment in supply and could lead to a dampening of property value appreciation.^{4,5}

During the study period, property taxes would rise each year as a result of the increase in assessed valuation resulting from new development. Once buildout occurs and development ceases, the rate of increase would decline. (Property tax revenues could potentially even decline after buildout if property turnover and value appreciation occur at relatively low rates.) Using the assumptions applied in the fiscal model, the drop in revenue that would occur the first year after buildout would total six percent or less of property tax receipts (see Appendix 10.19).

⁴The property tax submodel applied in this analysis assumes that homes in the low-density through medium-high density categories are sold - and reassessed - every ten years, and that high density residential and nonresidential properties will experience no significant turnover during the projection period (1993 through 2010). The rationale for assuming no significant turnover during the study period for these latter types of uses is that 1) high-density units are likely to be apartments, which tend to be resold on a less frequent basis than single-family homes, and 2) nonresidential properties are also resold less frequently than single-family homes, particularly if the buildings are owner-occupied. The tenancy characteristics of multi-family and nonresidential properties will not be known until actual projects are proposed for construction; the fiscal analysis therefore applies conservative turnover and value appreciation rates.

⁵Total taxable value of property at the end of each year has been deflated back to FY 1991-92 using an assumed annual inflation rate of five percent. The market values applied in the analysis were provided by the applicant (Trimark Communities, 1991), and have been evaluated for reasonableness with regard to current experience and future expectations in the Tracy area and eastern Alameda County. Because the property values used in this analysis are possibly high (they are based on the applicant's expectations), a revenue deficit shown by the fiscal model would indicate that a negative fiscal impact has a high probability of occurring.

State-Shared Revenue

State-shared revenue includes revenues disbursed by the State for general governmental activities, and are not tied to specific programs. In FY 1991-92, these revenues are expected to total \$26.1 million, approximately \$53 per resident countywide (Table 4.9-3). State-shared revenues are typically allocated to the County on the basis of such variables as population level, offsetting locally-collected revenues, and per capita income.

Sales Taxes

San Joaquin County collects a one percent tax against the gross receipts of most retail items. The extent of retail expenditures that would occur within the Mountain House New Town is difficult to precisely quantify because these expenditures would be determined both by the amount (and type) of retail space built within the community, and by the propensity of local residents and workers to patronize these facilities. During the early years of development, for example, residents would likely do the majority of their shopping in the City of Tracy and at retail facilities in other incorporated areas; sales taxes collected by the County could be relatively small on a per capita basis. As the unincorporated community grows, market support would be generated for on-site stores, which, if built, would increase per capita sales taxes received by the County.⁶

TABLE 4.9-3

SAN JOAQUIN COUNTY REVENUES (dollars, in thousands)

Revenue Category	1991-92 Approved Revenue (dollars, in thousands)	Percent of Total Revenues	Revenue per Capita ¹ (dollars)
<u>General Purpose Revenues</u>			
Property taxes	84,600	66.0	172.65
State-shared revenues	26,100	20.4	53.27
Sales taxes	7,200	5.6	14.69
Document transfer taxes	3,100	2.4	6.33
Other revenues	7,200	5.6	14.69
Subtotal	128,200	100.0	261.63
<u>Road Fund Revenues</u>			
Gas taxes	6,683	--	13.64
Fines and forfeitures	691	--	1.41

¹ The estimated 1991 countywide population is 490,008, per the State Department of Finance.

Source: San Joaquin County, Office of the County Administrator, 1991-92 Budget; Economic and Planning Systems, Inc.

⁶Aside from retail expenditures, tax revenue can also be generated by point-of-origin sales and equipment usage at offices and industrial facilities. These sales and use taxes fluctuate greatly on a per-square-foot basis (many businesses generate no such taxes) and are much lower than sales taxes generated by retail stores. For this reason, and because of the uncertainty regarding the potential extent to which the Mountain House New Town would attract tax-generating commercial and industrial enterprises, nonretail sales and use taxes have been excluded from the analysis of fiscal impacts.

4.9 FISCAL IMPACTS

Retail sales taxes from the project have been estimated in this DEIR assuming that the Mountain House New Town would experience sales "leakage" to stores located outside of the community, and that per capita tax receipts for the County from the project site would consequently be lower than in nearby similarly-sized cities. These assumptions were based on uncertainties regarding market capture, and the project site occupying a location at the periphery of the County.

Data provided by the State Board of Equalization indicates that, if during calendar year 1990, taxable retail sales in Tracy averaged approximately \$4,600 per capita (Table 4.9-4). Given Tracy's location (more central to other population centers) and the increasing diversity of its retail facilities (a major shopping center is proposed for development near Interstate 205), per capita taxable retail sales at Mountain House would likely be less than those currently experienced in Tracy. During the initial years of development, taxable retail sales at the project site might even be substantially lower, due to inadequate market support for retail facilities. Ripon, for example, had a 1990 population of 7,902 and experienced taxable retail sales of only \$2,064 per capita (Table 4.9-4). Residents of Ripon were shopping in communities elsewhere (e.g., Modesto, Manteca, Stockton) that were large enough to support a wider complement of retail facilities. However, because of recent additions to the list of retail goods that can be taxed, the fiscal impact analysis applies a per capita retail sales multiplier of \$4,000 per capita across all phases of development of the project site, which is only 13 percent less than Tracy's 1990 experience.

TABLE 4.9-4

1990 TAXABLE RETAIL SALES, BY CITY

City	Taxable Retail Sales					Household Population (1990)	Sales Per Capita
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1990 Total		
Escalon	5,554	6,339	6,446	6,177	24,516	4,678	5,241
Lathrop	7,943	9,575	8,417	6,298	32,233	6,960	4,631
Lodi	74,536	84,599	85,884	85,868	330,887	50,692	6,527
Manteca	54,977	59,342	60,731	58,177	233,227	41,771	5,583
Ripon	4,151	3,875	3,880	4,402	16,308	7,902	2,064
Stockton	312,564	363,987	356,943	384,811	1,418,305	210,366	6,742
Tracy	36,665	43,353	43,264	40,710	163,992	35,588	4,608

Source: California State Board of Equalization, 1990; California Department of Finance, 1991; Economic and Planning Systems, Inc.

Use of per capita sales figures based upon recent experience in San Joaquin County, rather than in the Bay Area, is appropriate for the Mountain House New Town fiscal analysis because: (1) the incomes of new residents in San Joaquin County are likely to be lower than those of new residents in suburban East Bay communities, particularly given the market orientation -- first-time buyers -- proposed by the applicant; (2) retail development in the New Town will necessarily lag population growth (retailers prefer to see homes built and occupied before they will commit to leasing space), resulting in on-site taxable sales that will at least

initially be lower than sales experienced in more mature communities; and (3) the proposed New Town would occupy a position at the periphery of the County, which is less desirable for many retailers than sites eastward that would be more central to the County's population concentrations.

Document Transfer Taxes

When real property is sold, the County levies a transfer tax of \$1.10 per \$1,000 of that property's equity value. Transfer tax projections for the Mountain House New Town are based on the sale of new homes and upon their later resale as determined by the property tax model. Document transfer taxes represent 2.4 percent of the County's FY 1991-92 estimated general fund revenues.

Other General Fund Revenues

The Other General Fund Revenue category includes all other monies that might increase as a result of development at the Mountain House site. These miscellaneous revenues are expected to total approximately \$7.2 million in FY 1991-92 for San Joaquin County, which averages nearly \$15 per capita countywide (Table 4.9-3). This per capita multiplier of \$15 is applied in the fiscal analysis for the project. Excluded from this total is the County's Transient Occupancy Tax; although the project applicant anticipates hotel development would occur at some point in the community's growth, the timing and extent of such development is extremely problematic and could conceivably never occur.

Road Fund Revenues

In addition to property taxes collected through Road District No. 5, the County Road Fund receives revenues from State-imposed gas taxes and from traffic fines and forfeitures. Fiscal Year 1991-92 gas tax receipts are expected to total \$6.7 million, or approximately \$14 per capita (Table 4.9-3). Fines and forfeitures would average slightly more than one dollar per capita.

Countywide Expenditures⁷

The County aggregates its programs and departments into nine functional areas: general government, capital maintenance and improvements, environmental protection, law and justice, roads and facilities, health services, human services, education, and parks and recreation. Many of the costs incurred within these functional areas are financed by program-generated revenue, offsetting grants, and/or cost-sharing by other levels of government. The fiscal impact analysis assumes that these revenues would continue to grow in proportion to the expenditures that they cover.

⁷As noted earlier in this section, the Mountain House New Town would require two types of services: services that counties provide to all residents irrespective of whether they reside in incorporated and unincorporated areas, and services that are provided to unincorporated residents only. In addition, the urban character of the Mountain House project is anticipated to generate a need for services and service levels that would be higher than those provided to rural residents. The fiscal impact analysis examines each of these types of costs.

4.9 FISCAL IMPACTS

The remaining expenditures, defined as "Net County Cost" (NCC), are financed by the County's General Fund revenues; these costs are the focus of fiscal impact analysis. Cost impacts to NCCs are estimated as described below, Appendix 10.19 defines in greater detail the nine County functions and their costs.

General Government

Net County Cost for General Governmental activities total \$19.3 million for FY 1991-92 (Table 4.9-5). All items within this category are assumed to be affected by the Mountain House project with the exceptions of: 1) Collections, which is a financial function assumed to require a higher level of effort given the urban character of the proposed project and is therefore examined later in this analysis; 2) Equipment Use Allowance/Debt, which primarily reflects lease payments for the Human Services Agency building and the new jail, and is not expected to be affected by the Mountain House New Town; 3) and Data Processing and the Recorder, both of which tend to generate a net surplus for the County. Using the estimated 1991 County population of 490,000, the per capita multiplier for general government costs is \$31.60 (Table 4.9-5).

TABLE 4.9-5

GENERAL PURPOSE NET COUNTY COSTS (NCC) (dollars, in thousands, unless otherwise indicated)

County Program	1991-92 Total Net County Cost	Cost Bases for NCC ¹			Costs per Capita ⁴ (in dollars)
		Costs Allocated to County- wide Population ²	Costs Allocated to Unincor- porated Population ³	Costs not Allocated	
General government	19,304	15,466	0	3,838	31.6
Capital maintenance and improvement	4,628	4,177	450	0	12.1
Environmental protection	4,642	495	106	4,020	1.9
Law and justice	74,000	59,966	4,534	9,500	158.5
Roads and facilities	491	93	0	398	0.2
Health services	17,965	17,965	0	0	36.7
Human services	20,843	20,843	0	0	42.5
Education	1,173	841	0	332	1.7
Parks and recreation	2,267	177	139	1,951	1.5
Total	145,313	120,023	5,229	20,039	286.7

¹ For more detail regarding these allocations, see Appendix 10.19.

² The estimated 1991 Countywide population is 490,008, per California Department of Finance, Report E-5 Preliminary, May 1991.

³ The estimated 1991 unincorporated population is 125,573, per California Department of Finance, Report E-5 Preliminary, May 1991.

⁴ Costs allocated to the Countywide population and divided by 490,008; costs allocated to the unincorporated population are divided by 125,573.

Source: San Joaquin County, Office of the County Administrator, 1991; Economic and Planning Systems, Inc.

Capital Maintenance and Improvement

Net County Cost for Capital Maintenance and Improvement is \$4.6 million for FY 1991-92 (Table 4.9-5). The items within this category that would be affected by development of Mountain House pertain to the maintenance of governmental buildings and public improvements that would be located at the project site. Because the size of public buildings and improvements has not been specified for the proposed project, the analysis estimates these costs on a per capita basis, which assumes that population size acts as an appropriate proxy for governmental space requirements. The FY 1991-92 per capita multiplier for Capital Maintenance and Improvement costs is \$12.10 (Table 4.9-5).

Environmental Protection

Net County Cost for Environmental Protection is \$4.6 million for FY 1991-92 (Table 4.9-5). Expenditures for items within this category are estimated on a countywide per capita basis with the exceptions of Fire Prevention, Building Inspection, and Planning Division, all of which are expected to require higher levels of delivery given the urban character of the proposed project. These costs are examined later in this analysis. The FY 1991-92 per capita multiplier for Environmental Protection costs is \$1.90 (Table 4.9-5).

Law and Justice

Net County Cost for Law and Justice is \$74 million for FY 1991-92 (Table 4.9-5). Expenditures for all line items are estimated on a countywide per capita basis with the exceptions of Sheriff Patrol and Detective functions, both of which are expected to require higher levels of service delivery given the urban character of the proposed project. These costs are examined later in this analysis. The FY 1991-92 per capita multiplier for Law and Justice costs is \$158.50 (Table 4.9-5).

Roads and Facilities

Net County Cost for Roads and Facilities is \$491,000 for FY 1991-92 (Table 4.9-5). Nearly all of this cost was represented by a contribution to the Airport Enterprise Fund, which is assumed to remain unaffected as a result of development of Mountain House. The remaining expenditures average \$0.2 per capita countywide (Table 4.9-5).

Health Services

Net County Cost for Health Services is approximately \$18 million for FY 1991-92. Expenditures for all line items are estimated on a countywide basis, and total \$36.70 per capita (Table 4.9-5).

Human Services

Net County Cost for Human Services is \$20.8 million for FY 1991-92. Expenditures for all line items are estimated on a countywide basis, and totals \$42.50 per capita (Table 4.9-5).

4.9 FISCAL IMPACTS

Education

Net County Cost for Education is \$1.2 million for FY 1991-92. Approximately one-quarter of these costs is for the University of California Cooperative Extension, which provides services to the agricultural community and is therefore not expected to be adversely affected by the Mountain House project. Expenditures for the remaining line items are estimated on a countywide basis, and total \$1.70 per capita (Table 4.9-5).

Parks and Recreation

Net County Cost for Parks and Recreation is \$2.3 million for FY 1991-92 (Table 4.9-5). Nearly all of this cost is for park maintenance, which is examined separately later in this analysis. The remaining expenditures are for litter control, which are assumed to increase on the basis of size of the unincorporated population, and average \$1.50 per capita (Table 4.9-5).

Urban Programs

Certain services required by the Mountain House New Town would likely require urban delivery levels rather than the typically lower service levels provided to residents of the unincorporated areas. Services so affected are: law enforcement, consisting of police patrol, detective activities, and traffic control; community administration, finance and risk management; planning and building inspection; public works and engineering review; animal control; and park maintenance and recreation services. Unless otherwise noted, projected Mountain House costs are based upon FY 1991-92 expenditures budgeted by the City of Tracy (Table 4.9-6).⁸

Law enforcement costs are estimated two ways. First, as per the Draft County General Plan, the New Town is assumed to require 1.5 patrol officers per 1,000 population (San Joaquin County, 1991b), with an average cost per officer of \$77,600, including benefits, overtime, equipment and vehicle (based on FY 1991-92 cost estimates for providing police services to the recently incorporated community of Lathrop). The resulting per capita cost for patrol services is \$116.40. Detective services and traffic control are projected using City of Tracy expenditures, which for FY 1991-92 average \$11.7 per capita (Table 4.9-6). Department administration and other overhead costs are assumed to be covered in the countywide Law and Justice NCC multiplier.

Administration, finance and risk management (insurance) expenditures are based on City of Tracy budgets for its City Administration, Revenue Collection, and Budget Coordination programs. For FY 1991-92, these costs average \$22.60 per capita (Table 4.9-6).

⁸Tracy's experience is considered appropriate for Mountain House given the City's proximity to the project site, and given that its costs tend to be higher per capita than those of the cities of Manteca and Lodi, ensuring that this analysis is fiscally conservative.

Planning and building inspection costs are based on City of Tracy expenditures for its Community Development Department. For FY 1991-92, when netted of fee revenues, grants and capital offsets, these costs average \$2.80 per capita (Table 4.9-6).

Public works and engineering costs are based upon City of Tracy expenditures for the following engineering programs: Capital Projects Design; Traffic Engineering; Traffic Signals and Street Lighting; and Traffic Signs and Striping. For FY 1991-92, these costs average \$24.40 per capita (Table 4.9-6). Overhead costs are assumed to be covered in the countywide Environmental Protection NCC multiplier.

Animal control costs are based upon similar City of Tracy expenditures in its public works budget, which average \$4.50 per capita (Table 4.9-6).

Parks and recreation expenditures consist of two types of costs: park and open space maintenance, and administration/recreation services. Maintenance is assumed to average \$6,000 per acre for neighborhood/community parks and \$1,600 per acre for regional parks. Administration/recreation services are assumed to cost an average of \$500 per acre per year. This latter cost is based upon City of Tracy expenditures for Parks and Recreation Administration, General Recreation, and Athletics. For FY 1991-92, these costs average \$6.40 per capita (Table 4.9-6). All other recreation programs are assumed to be financed through user fees.

TABLE 4.9-6

**CITY OF TRACY PROGRAM COSTS
APPLICABLE TO MOUNTAIN HOUSE**

City Program	FY 1991-92 Program Cost	Cost per Capita ¹
<u>Police</u>		
Detectives	312,490	
Traffic control	127,310	
Subtotal	439,800	11.7
<u>Administration</u>		
City administration	361,270	
Budget coordination	94,680	
Revenue collection	393,800	
Subtotal	849,750	22.6
<u>Planning/Building Inspection²</u>	103,810	2.8
<u>Public Works/Engineering</u>		
Capital projects design	393,200	
Traffic engineering	50,270	
Traffic signals - engineering	323,880	
Traffic signs - engineering	146,670	
Subtotal	914,020	24.4
<u>Animal Control</u>	166,970	4.5
<u>Recreation³</u>		
Administration	79,476	
General recreation	97,557	
Athletics	64,252	
Subtotal	241,285	6.4
<u>Fire Protection</u>	2,533,310	67.5

¹ Tracy's projected population for 1991 is 37,520.

² Represents expenditures financed through means other than offsetting fees and grants.

³ Approximately 54 percent of the City's Parks and Recreation budget is financed through the General Fund. This percentage is assumed to apply to the costs shown here.

Source: City of Tracy Adopted Budget, FY 1991-92; Economic and Planning Systems, Inc.

Programs Financed through Other Funds

Fire protection costs are projected using City of Tracy FY 1991-92 expenditures, which average \$67.50 per capita (Table 4.9-6). However, actual fire protection costs are unlikely to rise in direct relationship to population growth. Increases in fire suppression expenditures are typically "lumpy" because growth in service demand is met by adding entire engine companies (whose crews can average between 6 and 12 firefighters in size) rather than individual firefighters. In addition, costs incurred during the initial years of development might be lower than suggested in this analysis if the Mountain House project were to rely on volunteers for fire suppression.

Road maintenance expenditures are projected by estimating the number of street miles created as a result of development of the New Town, and then multiplying these estimates by a maintenance cost that, at the County's request, is assumed to average \$12,000 per mile per year. Street miles are estimated by assuming the following: 1) 20 percent of residential acreage consists of roadways, 2) 10 percent of retail and commercial acreage consists of roadways, 3) five percent of industrial acreage consists of roadways; and 4) the average paved width of a road is 60 feet.

The County currently provides library services to the cities of Stockton, Manteca, Tracy, Ripon, Escalon, and the unincorporated area. For FY 1991-92, these costs average \$12.60 per capita.

General Fund Programs⁹

Impact

4.9-1 The proposed project may require more in General Fund-financed service expenditures than generated in General Fund revenues. The imbalance of expenditures over revenues could occur if non-residential land uses develop more ~~closely~~ slowly than anticipated by the applicant.

As proposed by the applicant, the project would generate General Fund revenues that would exceed service costs. Under the assumptions applied in the fiscal model, the net surplus thus created would grow over the study period, reaching approximately \$1.5 million by the year 2010 (Table 4.9-7).

General Fund revenues contributed by the proposed project would increase at an annualized rate of 16.4 percent per year, rising from slightly less than \$1.8 million in 1993 to approximately \$23.5 million by the year 2010. Property taxes would represent more than 70 percent of the revenues generated over the projection period.

⁹The computer model used to project the fiscal impact of the Mountain House New Town is presented in Appendix 10.19. All projections of costs and revenues are in FY 1991-92 dollars.

TABLE 4.9-7

SUMMARY OF REVENUES AND EXPENDITURES FOR PROPOSED PROJECT
(dollars, in thousands)

Item	Fiscal Year Ending																	
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
General Purpose Programs																		
Revenues	1,775	3,327	4,866	6,169	7,496	8,821	10,146	11,474	12,756	14,056	15,364	16,681	18,010	19,053	20,140	21,246	22,271	23,516
Expenditures	1,411	2,822	4,233	5,484	6,736	7,987	9,238	10,489	11,736	12,982	14,228	15,474	16,720	17,776	18,833	19,889	20,945	22,002
Surplus/(Deficit)	364	505	633	685	760	834	908	985	1,020	1,074	1,136	1,207	1,290	1,277	1,307	1,357	1,426	1,514
Fire Protection																		
Revenues	362	718	1,069	1,368	1,664	1,960	2,254	2,548	2,830	3,113	3,397	3,682	3,969	4,191	4,415	4,643	4,875	5,110
Expenditures	184	368	553	719	886	1,052	1,219	1,386	1,553	1,721	1,888	2,056	2,224	2,368	2,512	2,657	2,801	2,945
Surplus/(Deficit)	178	350	516	649	778	908	1,035	1,162	1,277	1,392	1,509	1,626	1,745	1,823	1,903	1,986	2,074	2,165
Road Maintenance																		
Revenues	211	419	625	803	979	1,155	1,330	1,506	1,676	1,846	2,017	2,188	2,360	2,496	2,634	2,773	2,914	3,057
Expenditures	56	112	168	216	264	312	360	408	457	506	555	604	653	697	741	785	828	872
Surplus/(Deficit)	155	307	457	587	715	843	970	1,098	1,219	1,340	1,462	1,584	1,707	1,799	1,893	1,988	2,086	2,185
Library																		
Revenues	96	190	283	363	441	520	598	676	750	825	901	976	1,052	1,111	1,171	1,231	1,293	1,355
Expenditures	34	69	103	134	165	196	228	259	290	321	353	384	415	442	469	496	523	550
Surplus/(Deficit)	62	121	180	229	276	324	370	417	460	504	548	592	637	669	702	735	770	805

Note: See Appendix 10.19 for additional detail regarding these projections.

Source: Economic and Planning Systems, Inc.

Conversely, General Fund expenditures are projected to rise from \$1.4 million in 1993 to \$22.0 million by the year 2010 — a 17.6 percent annualized rate of growth. About 56 percent of the General Fund expenditures created by the proposed project would consist of costs to countywide programs (e.g., the court system), while the remaining 44 percent would be incurred for urban-type services and delivery levels. The most important of the latter are police patrol activities, which would represent approximately 23 percent of all General Fund expenditures.

If the proposed project builds out more slowly than anticipated by the applicant, ~~then~~ **alternative funding sources such as CSD charges may be necessary to avoid** General Fund deficits ~~could occur~~ during the development process. Concerns have been raised that the rate of nonresidential development projected for the New Town might be overly-optimistic (Economic & Planning Systems, 1991), which has an important implication because commercial and industrial development generate revenues that exceed their service costs, and therefore subsidize revenue deficits that might occur with residential development. If, for example, only 40 percent of the proposed commercial and industrial areas develop during the projection period, then a net annual deficit could occur as early as 1996. This deficit could total nearly one-half million dollars by the year 2010 (Table 4.9-8). A net deficit continues to occur for much of the development period even when assumptions are changed to optimistically reflect: 1) a turnover rate of once every seven years (rather than 10 years) for low-density through medium-high density homes, and 2) a turnover rate of once every 15 years for high-density residential, retail, office, and industrial land uses. See Appendix 10.19 for additional detail regarding this specific analysis.

Mitigation Measures

- 4.9-1(a) *The County should monitor demand for new services and revenue generation during buildout of the New Town to assure that expenditures are offset by new revenues. As the basis of this monitoring activity, the net fiscal benefit of the project to the County should be estimated annually through, and after, buildout. Depending upon the results of the monitoring, adjustments can be made in service delivery, fees and charges, and/or use of other financing mechanisms. **Such adjustments should be adequate to offset costs as necessary and should be a mandatory condition of development approval.***
- 4.9-1(b) *Because of the uncertainty regarding market acceptance of the proposed project, and therefore of its buildout schedule, the County should require that alternative financing/management entities be in place as early as possible to ensure that the project does not siphon General Fund revenues that are needed for other programs. Potential entities include a Mello-Roos Community Facilities District, which could also be used to fund capital improvements, or a Community Services District as proposed by the project applicant. Specific entities should be chosen at the Specific Plan stage of project approval.*
- 4.9-1(c) **Property tax revenue, along with other revenue sources available to the County for general purposes, would only be used to support existing countywide services.**

4.9 FISCAL IMPACTS

Urban services and higher levels of County services, as required to be provided to the proposed project by the County General Plan or other mitigation measures included in this DEIR, would be funded through project-specific special taxes and/or assessments levied by local special districts. Reallocation of the County's property tax base is limited by State statutes regulating property tax allocation (e.g., Revenue and Taxation Code, section 99). These statutes provide that a reallocation of property tax occurs only insofar as services funded by County property taxes are transferred to Mountain House special districts.

If, for example, even half of the New Town's projected police patrol expenditures were financed using a special tax established through a Community Facilities District, then the operating deficits shown in Table 4.9-8 (which reflect a lower rate of commercial and industrial development than anticipated by the applicant) would be entirely eliminated.

TABLE 4.9-8

**SUMMARY OF REVENUES AND EXPENDITURES FOR PROPOSED PROJECT
ASSUMING 40 PERCENT BUILDOUT OF COMMERCIAL AND INDUSTRIAL LAND USES**
(dollars, in thousands)

Item	Fiscal Year Ending																	
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
General Purpose Programs																		
Revenues	1,574	2,929	4,274	5,436	6,624	7,812	9,003	10,199	11,366	12,551	13,742	14,954	16,173	17,188	18,247	19,324	20,421	21,538
Expenditures	1,411	2,822	4,233	5,484	6,736	7,987	9,238	10,489	11,736	12,982	14,228	15,474	16,720	17,776	18,833	19,889	20,945	22,002
Surplus/(Deficit)	163	107	41	(48)	(112)	(175)	(235)	(290)	(370)	(431)	(481)	(520)	(547)	(588)	(586)	(565)	(524)	(464)
Fire Protection																		
Revenues	303	601	895	1,152	1,409	1,664	1,919	2,174	2,422	2,672	2,923	3,176	3,430	3,644	3,860	4,080	4,303	4,530
Expenditures	184	368	553	719	886	1,052	1,219	1,386	1,553	1,721	1,888	2,056	2,224	2,368	2,512	2,657	2,801	2,945
Surplus/(Deficit)	119	233	343	433	523	612	700	788	869	951	1,035	1,120	1,206	1,276	1,348	1,423	1,502	1,585
Road Maintenance																		
Revenues	183	364	544	702	859	1,016	1,173	1,330	1,484	1,639	1,794	1,950	2,017	2,239	2,373	2,508	2,645	2,784
Expenditures	50	104	156	202	247	292	337	382	428	475	521	567	613	655	697	740	782	824
Surplus/(Deficit)	133	260	388	500	612	724	836	948	1,056	1,164	1,273	1,383	1,494	1,584	1,676	1,768	1,863	1,960
Library																		
Revenues	80	159	237	306	373	441	509	576	642	708	775	842	910	966	1,023	1,082	1,141	1,201
Expenditures	34	69	103	134	165	196	228	259	290	321	353	384	415	442	469	496	523	550
Surplus/(Deficit)	46	90	134	172	208	245	281	317	352	387	422	458	495	524	554	586	618	651

Note: See Appendix 10.19 for additional detail regarding these projections.

Source: Economic and Planning Systems, Inc.

4.9 FISCAL IMPACTS

The Tracy Rural Fire Protection District is projected to receive sufficient property taxes from the proposed project to provide the latter with an urban level of service delivery. The net surplus projected for the District would rise from \$178,000 in 1993, to \$2.2 million by the year 2010 (Table 4.9-7).

The Road Fund is projected to receive a net surplus over the entire study period, rising from \$155,000 in 1993, to \$2.2 million by the year 2010 (Table 4.9-7). The majority of the revenue received by the Road Fund would consist of property taxes allocated to Road District No. 5.

The Library Fund is projected to receive from the proposed project a net surplus over the entire study period, rising from \$62,000 in 1993, to \$805,000 by the year 2010. All of the revenues received by the Library Fund would consist of property taxes.

Even though the Library Fund, the rural fire district, and the road district are projected to receive from New Town development, revenues that exceed costs, these net surpluses are not necessarily available for transfer to the County General Fund. In a post-Proposition 13 fiscal environment, expenditures for these services tend to be revenue-constrained, resulting in service levels that fall below desired delivery standards. The revenue surpluses projected for the library system, for rural fire protection, and for maintenance of County roads should therefore be first applied toward ensuring that service delivery is at an adequate level, and that deferred maintenance/expenditures are satisfied.

During at least the early years of development, the proposed project could represent a fiscal benefit for the City of Tracy because the new residents and businesses would likely patronize retail facilities in Tracy, thereby generating sales tax revenues for that community. If, however, the project developer(s) should be successful in attracting competing retail facilities to the project site, then the City of Tracy might lose sales tax revenues. The City of Tracy is currently financing the construction of a number of public improvements (e.g., public buildings, streets, parks, and storm drainage systems) through bonds that are being retired with special taxes collected through a Community Facilities District (CFD). The amount of special taxes collected each year relies upon a certain level of development occurring within the CFD. To the extent that competition from the proposed project reduces the rate of development within Tracy, then the financing of these improvements could be adversely affected and/or the rate of facility development would be slowed.

Neither the Lammersville Elementary School District nor the Tracy Joint Union High School District is anticipated to incur negative fiscal impacts from development of the proposed project. As noted in the Public Services section of this EIR, the proposed project is estimated to need 12 elementary/middle schools and two high schools at buildout. School district operating expenditures are based on average daily attendance (ADA), and are regulated by the State Department of Education. If expenditures exceed revenues raised through the property tax, then the difference is financed through State aid. As ADA within the two school districts rises, the total expenditure allowed by the State would rise proportionately. Although this system ensures no long-term operating cost burden on the school districts, imbalances could conceivably occur within

a given fiscal year depending upon when enrollment rises relative to receipt of State aid, and the extent to which other costs fall outside of the ADA revenue transfer process.

Development of the proposed project has the potential for **indirectly** delaying construction of new facilities at the Tracy high school currently being built at Corral Hollow Road and Lowell Avenue (Bernakis, 1991). Facilities at this school are being financed by bonds issued through the CFD that the City of Tracy is using to pay for the construction of new public buildings. **Revenue from the existing CFD is increased almost completely by the construction of new homes on land within the CFD.** If residential development within the CFD slows as a result of competition from the Mountain House New Town, then construction of some of the specialized facilities proposed for the high school, such as a music building or a shop building, could be delayed (Bernakis, 1991).

4.10 FINANCIAL IMPACTS

SETTING

This section of the EIR examines the extent to which the land uses proposed for the Mountain House New Town could support the financing of the required public improvements.¹ To have no impact, these improvements must: 1) be funded without impairing the fiscal health of the County or of other local service providers, and 2) represent an acceptable level of cost-burden to the properties proposed for development.

Overview of Financing Issues

In recent years, public agencies have been severely restricted in their ability to pay for infrastructure to serve new development. Proposition 13, the elimination of State and Federal grant-in-aid programs, and escalating service and construction costs have all contributed to this situation. New development is now being required to fully fund not only the in-tract improvements that serve the project, but also the costs of infrastructure, such as arterial roadways, that serve a larger area.

The consequent need for development to "pay its own way" places financial demands upon projects that may affect their ability to obtain the monies needed to pay for capital facilities. The objective of a financial impact analysis is to determine whether the costs of needed public improvements can be financed given market conditions, available financing mechanisms, and financial lending constraints.

Capital facilities are typically financed through a variety of means, including: fees; exactions; dedications of land and privately financed improvements; assessment districts and Mello-Roos Community Facilities Districts (CFDs); and General Fund capital improvement funds. The appropriate mix of financing methods depends on the type and value of the development, the financial circumstances of the developer, and the geographic distribution of the benefits provided by the improvements. For the Mountain House financial analysis, the costs of importance are those financed using bonds issued by public service providers (such as a CFD or a special assessment district) because these costs would need to be secured by the value of the developable property, and would therefore represent a financial burden to the project's property owners.

IMPACTS AND MITIGATION MEASURES

Given the uncertainty as to whether the proposed project would develop as anticipated by the applicant, this analysis evaluated financial feasibility using the likely magnitude of land values relative to the costs of the proposed improvements. The ratio of debt (i.e., lien amount) to property value is known as the lien-to-value ratio, and reflects the feasibility of financing improvements with bonds secured by the value of the benefiting properties. The rule of thumb for bonding capacity is that the lien amount should not exceed 33 percent of the value of the property.

Another way to measure whether financing costs are too burdensome is by transforming capital costs into an annualized debt service assessment and determining how much this assessment would increase the tax rate applied to project residential units. A rule of thumb is that property taxes and assessments together should

¹The previous section, 4.9 Fiscal Impacts, examined the financing of ongoing services.

4.10 FINANCIAL IMPACTS

not exceed two percent of property value. Given that property taxes already equal one percent of property value, additional assessments should likewise total no more than one percent of value.

Unless otherwise noted, all identified impacts are considered significant adverse impacts. The corresponding mitigation measures, unless otherwise noted, would be sufficient to reduce impacts to a less-than-significant level.

Estimated Project Costs

The costs applied in this analysis are estimates provided by the applicant, the affected school districts, and the DEIR transportation consultant. These costs should be considered preliminary, given the general nature of the land use plan under review. If the Mountain House New Town were approved for development, then the subsequent Specific Plan would allow the preparation of more precise cost estimates, development phasing schedules, and financing plans.

The preliminary cost estimate for capital improvements needed by the proposed project is ~~\$688.3~~ **705.8** million (Table 4.10-1).² This total includes the following:

- Arterial-related road improvements, including the arterials themselves, major intersections, parkway landscaping, and other improvements. These improvements would likely be financed with bonds issued by one or more special districts (e.g., a Community Facilities District (CFD) or a special assessment district). ~~Approximately \$30 million in road widenings that had not been identified by the applicant, but which have been noted in Table 4.14-13 of this DEIR are included in the analysis.~~
- Regional roads and transit facilities, which would likely be financed through a combination of bonds, development agreements, and County-imposed impact fees. **Included in this category are road improvements that had not been identified by the applicant, but that have been noted in Table 4.14-16 of this DEIR.**
- Open space, consisting of public parks, **protected lands**, and private facilities such as golf courses. Private open space, ~~protected~~ wetlands, and landscape easements would be ~~provided~~ **dedicated** by the applicant, and/or other project developers. Development of regional parks would presumably be provided through a development agreement unless the County institutes a park development fee. Development of neighborhood and community parks would be financed with bonds issued through a CFD or an assessment district.

²The applicant estimates capital costs would total \$612,202,000 (Trimark, 1991). The difference between the applicant's estimate and the estimate applied in this analysis is a result of increased road widening and school construction costs.

- Water facilities, which include pumping plants and other source improvements (to be privately financed, according to the applicant), treatment facilities financed by revenue bonds paid off with service charges, and storage and transmission facilities financed with bonds issued through a CFD or an assessment district.

TABLE 4.10-1

CAPITAL IMPROVEMENT FUNDING, MOUNTAIN HOUSE NEW TOWN
(thousands of 1991 dollars)

Capital Improvement	Preliminary Total Cost	Proposed Sources of Funding					Special Tax/ Assessment (CFD, AD) ¹
		Privately- Provided	Development Agreement/ County Fees	School Impact Fees	Revenue Bonds		
<u>Arterial Roadways</u>							
New roads	25,430						25,430
Major intersections	313						313
Road widening²	39,100						39,100
Railroad crossing	9,038						9,038
Miscellaneous road structures	10,701						10,701
Parkway landscaping	3,846						3,846
Subtotal	49,328						49,328
<u>Regional Roads/Transit</u>							
Transit improvement	6,875						6,875
Roads	7,217		7,217				
Intersections	250		250				
On-site Improvements²	15,200						15,200
Off-site Improvements²	29,850		7,217				22,633
Interchanges ²	8,000						8,000
Subtotal	59,925		7,217				52,708
<u>Open Space</u>							
Neighborhood parks	5,270						5,270
Community parks	10,965						10,965
Regional parks	2,975		2,975				
Golf courses	12,660	12,660					
Marina	4,140	4,140					
Buffer and landscape easements	1,573	1,573					
Protected wetlands	1,000	1,000					
Swainson's hawk habitat	11,800	11,800	2,975				16,235
Kit fox habitat	4,200	4,200					
Subtotal	55,083	35,873					
<u>Water</u>							
Water source improvements	4,757	4,757					
Water treatment	18,562				18,562		
Water storage	7,691						7,691
Water transmission mains	8,950						8,950
Subtotal	39,960	4,757			18,562		16,641
<u>Storm Drainage</u>							
Storm drains	17,393						17,393
Retention basins	3,258						3,258
First flush	3,750						3,750
Creek and channel improvements	7,141						7,141
Levee Improvements	1,400						1,400
Subtotal	32,942						32,942

Table 4.10-1 - *continued*

Capital Improvement	Preliminary Total Cost	Proposed Sources of Funding				
		Privately- Provided	Development Agreement/ County Fees	School Impact Fees	Revenue Bonds	Special Tax/ Assessment (CFD, AD) ¹
<u>Sewers</u>						
Major transmission	10,790					10,790
Treatment and effluent storage	33,469				33,469	
Subtotal	44,259				33,469	10,790
<u>Water Reclamation</u>						
Wastewater recycling and disposal	8,076					8,076
Sludge treatment and disposal	8,973					8,973
Subtotal	17,049					17,049
Farm Drainage	4,003	4,003				
<u>Utilities</u>						
Electric power	6,780				6,780	
Natural gas	5,548				5,548	
Communications	225				225	
Utility relocation and replacement	7,520	7,520				
Subtotal	20,073	7,520			12,553	
<u>Public Facilities</u>						
Community administration facilities	4,000			58,550		4,000
Schools ³	197,800			58,550		139,250
Police facilities	1,505					1,505
Fire facilities	2,926					2,926
Library	4,018					4,018
Community center	1,000					1,000
Waste disposal/recycling	800				600	200
Subtotal	212,049			58,550	600	152,899
<u>In-Tract Improvements</u>						
Residential	156,471	156,471				
Industrial/commercial	14,682	14,682				
Subtotal	171,153	171,153				
Total Capital Costs	705,824	223,306	10,442	58,550	65,184	348,592

¹ CFD = community facilities district; AD = assessment district.

² ~~The applicant had estimated that necessary road widenings would cost approximately \$9.1 million. However, Table 4.14-13 of this DEIR identifies road widening expenditures totalling \$39.1 million. This latter estimate is used in place of the applicant's estimate.~~
Estimates of road costs based on Table 4.14-16.

³ The Lammersville School District estimates that school construction and land acquisition costs would total approximately \$111.4 million (Caldwell Flores Winters, Inc., 1991). The Tracy Public Schools District estimates that the secondary schools needed to serve the proposed project would cost \$86.4 million (Bernakis, 1991). Offsetting revenues from school impact fees are estimated in Appendix 10.20 of this DEIR.

Source: Trimark Communities, Inc., *Fiscal and Financial Data Package*, 1991; Caldwell Flores Winters, Inc., 1991; Tracy Public School District, 1991; **DKS Associates**; Economic and Planning Systems, Inc.

- Storm drainage facilities, all of which would be financed with bonds issued through a CFD or an assessment district.
- Sewerage infrastructure, consisting of trunk lines financed through bonds issued through a CFD or an assessment district, and a treatment facility financed through revenue bonds paid off with service charges.
- Water reclamation facilities, to be financed entirely with bonds issued through a CFD or an assessment district.
- Drainage systems for adjacent irrigated farmlands, to be provided by the developer.
- Utilities such as electrical and telephone systems, to be financed primarily through service charges levied by utility companies.
- Public facilities such as fire stations and schools. With the exception of schools, which would receive AB 2926 impact fees from new development, most of these expenditures would be financed with bonds issued through a CFD or an assessment district.

Of the ~~\$688.3~~ **705.8** million in improvement costs estimated by the applicant and the DEIR consultant, ~~\$206.8~~ **223.3** million would presumably be paid by the applicant or other developer(s) as integral components of their projects, \$10.4 million would be provided through County fees or development agreements, \$58.6 million would be provided through school impact fees, \$65.2 million would be provided through revenue bonds, and the remainder, ~~\$347.3~~ **348.6** million, would be provided through bonds financed with special assessments (Table 4.10-1). The latter cost represents the focus of this financial impact analysis because it would be paid off through bonds secured by the value of the new development.

Although some of the proposed roadway improvements could benefit **vacant** properties outside of the proposed project, and should therefore be financed in part by these non-project properties, this financial analysis conservatively assumes all capital improvements identified in Table 4.10-1 would be financed entirely by the proposed project; this would possibly overstate the financing burden imposed on new development within the proposed project site. **While owners of vacant properties outside the project site should help finance improvements that benefit these properties, it would be unreasonable to ask property owners of already-developed parcels to finance improvements for which they have no need.**

Impact

- 4.10-1 The capital facilities required by the proposed project may prove too expensive for some project-area homeowners to adequately finance.**

4.10 FINANCIAL IMPACTS

Financial burden is estimated by allocating to each land use a portion of the capital costs to be financed with bonds issued through a CFD or assessment district. Allocations are performed on the basis of the benefits that the improvements provide to each land use. These benefits can be approximated using, for example, trip

generation rates when allocating road costs, or school children per dwelling unit when allocating school costs (Table 4.10-2).

Approximately 77 percent of the bond-financed capital costs would be allocated to the residential portion of the proposed project (Table 4.10-3). The medium-density residential portion would receive the largest allocation, approximately ~~\$164.9~~ **165.4** million, which represents 38 percent of the total costs allocated (Table 4.10-3). Costs allocated to nonresidential development are relatively small, primarily because commercial and industrial facilities tend to receive fewer benefits from public improvements than residential development.

When compared to total assessed value by land use, none of the preliminary capital cost allocations create an undue burden on the proposed development when using the standard of 33 percent lien-to-value ratio. The highest burden, ~~20.8~~ **20.9** percent of assessed value, would be incurred by the high-density residential component of the project (Table 4.10-4).

Translating capital cost allocations into annualized special assessments indicates that residential units could incur financing costs too burdensome for some homeowners. Special taxes on high density units, for example, would exceed one percent of home value (Table 4.10-4), and would therefore represent a significant burden to property owners. High-density residential units would also incur the greatest financing burden relative to the other land uses proposed for the New Town; the estimated special assessment for these units totals \$1,788 per unit, which equals ~~2.2~~ **2.0** percent of unit value.

These estimates of burden could increase if proposed land uses do not build out as expected by the applicant. For example, if only 40 percent of the proposed commercial and industrial acres develop — and assuming no change in infrastructure costs — then the burden on residential property would rise. Likewise, burdens would increase if the service deficits noted in the Fiscal Impact section of this DEIR (Section 4.9) were financed with special taxes levied through a special district. Burden estimates may also rise as costs, phasing schedules, and assessed values are refined during the Specific Plan phase of development approval.

Mitigation Measures

4.10-1(a) *The Specific Plan for the proposed project should include the following goals: 1) ensure that adequate funding sources have been identified for financing all necessary capital improvements, and 2) provide an equitable and nonburdensome means of sharing the costs of project-related improvements between all parties benefiting from the improvements. These goals should guide the formulation of the financing plan to be included in the Specific Plan. The financing plan should explicitly incorporate the following factors:*

- *The actual cost of facilities required. The cost estimates provided for this DEIR are likely to change as the proposed project becomes more refined at the Specific Plan stage. The applicant, as well as all service providers, would need to provide accurate and detailed infrastructure costs to be incorporated into the Specific Plan's financing plan.*

TABLE 4.10-2

CAPITAL COST ALLOCATION FACTORS BY LAND USE
(thousands of 1991 dollars)

Allocation Factor	Totals	Residential					Retail and Office					Industrial	
		Low Density	Medium Density	Medium-High Density	High Density	Community Commercial	Town Center	Neighborhood Commercial	General Commercial	Freeway Service	Office Commercial	Limited Industrial	General Industrial
Developable Acres	3,100	1,202	995	164	37	62	43	47	36	27	60	317	110
% distribution	100	38.8	32.1	5.3	1.2	2.0	1.4	1.5	1.2	0.9	1.9	10.2	3.5
Dwelling Units		5,409	7,960	1,968	666								
Units per acre	16,003	4.5	8	12	18								
% distribution	100	33.8	49.7	12.3	4.2								
Trip Generation ¹	15,839	5,463	8,040	1,043	353	4,910	7,237	3,722	2,851	2,138	1,320	3,874	724
Trip generation rates		1.01	1.01	0.53	0.53	3.3	3.3	3.3	3.3	3.3	0.5	0.47	0.47
% distribution	100	13.1	19.3	2.5	0.8	11.8	17.4	8.9	6.8	5.1	3.2	9.3	1.7
Other Allocation Factors													
Population	43,636	16,876	21,492	3,936	1,332								
Persons/household		3.12	2.7	2	2								
% distribution	100	38.7	49.3	9.0	3.1								
School children	16,003	5,409	7,960	1,968	666								
Students/household		1	1	1	1								
% distribution	100	33.8	49.7	12.3	4.2								
Employment	18,743					1,488	2,193	1,128	864	648	2,640	8,242	1,540
Employees/acre						24	51	24	24	24	44	26	14
% distribution	100					7.9	11.7	6.0	4.6	3.5	14.1	44.0	8.2
Dwelling Units Equivalents ²	23,047	7,337	9,344	1,711	579	323	477	245	188	141	574	1,792	335
% distribution	100	31.8	40.5	7.4	2.5	1.4	2.1	1.1	0.8	0.6	2.5	7.8	1.5
Market Value (\$ millions)	\$4,016	\$1,239	\$1,504	\$333	\$55	\$130	\$112	\$95	\$74	\$49	\$156	\$206	\$64
Per unit/acre ³		\$229	\$189	\$169	\$83	\$2,090	\$2,600	\$2,030	\$2,060	\$1,800	\$2,600	\$650	\$580
% distribution	100	30.8	37.5	8.3	1.4	3.2	2.8	2.4	1.8	1.2	3.9	5.1	1.6

¹ Represents number of trips generated during the peak travel period. Based on dwelling units for residential and employment for nonresidential land uses. Rates are from DKS Associates.

² The purpose of "dwelling units equivalents" is to make employment and population estimates directly comparable. This is done by assuming: 1) An average household size of 2.3 persons; 2) A worker is the equivalent of 0.5 resident.

³ Value is presented per unit for residential uses, and per acre for nonresidential uses.

Source: Economic and Planning Systems, Inc.

TABLE 4.10-3

CAPITAL COST ALLOCATIONS BY LAND USE
(thousands of 1991 dollars)

Capital Improvement	Preliminary Total Cost ¹	Capital Cost Financed Through Tax-Exempt Bonds ²	Basis for Cost Allocation ³	Residential Density				Retail and Office Commercial					Industrial		
				Low	Medium	Medium to High	High	Community	Town Center	Neighborhood	General	Freeway Service	Office	Limited	General
Arterial roadways	49,328	61,660	Trips	8,083	11,895	1,543	522	7,265	10,707	5,507	4,218	3,164	1,953	5,731	1,071
Regional roads, transit	59,925	65,885	Trips	8,637	12,710	1,649	558	7,763	11,441	5,885	4,507	3,381	2,087	6,124	1,144
Open space	55,083	20,294	Population	7,849	9,995	1,831	619	0	0	0	0	0	0	0	0
Water	39,960	20,801	DUEs	6,623	8,434	1,545	523	292	430	221	170	127	518	1,617	302
Storm drainage	32,942	41,178	Acres	15,966	13,217	2,178	491	824	571	624	478	359	797	4,211	1,461
Sewers	44,259	13,488	DUEs	4,294	5,469	1,001	339	189	279	144	110	82	336	1,049	196
Water reclamation	17,049	21,311	DUEs	6,785	8,641	1,582	536	299	441	227	174	130	531	1,657	310
Farm drainage	4,003	0	Acres	0	0	0	0	0	0	0	0	0	0	0	0
Utilities	20,073	0	DUEs	0	0	0	0	0	0	0	0	0	0	0	0
Public facilities	212,049	191,124	Res. DUs	64,600	95,066	23,504	7,954	0	0	0	0	0	0	0	0
In-tract improvements	171,153	0	DUEs	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs	705,824	435,740		122,835	165,426	34,833	11,542	16,632	23,869	12,608	9,657	7,243	6,221	20,389	4,484

¹ Refer to Table 4.10-1 for more detail regarding these costs.

² Debt vehicles could include Community Facilities Districts or Benefit Assessment Districts. Preliminary total costs are from the last column in Table 4.10-1, and also include a 25 percent issuance cost.

³ Refer to Table 4.10-2.

Notes: DUE = Dwelling Unit Equivalent
DU = Dwelling Units

Source: Economic and Planning Systems, Inc.

TABLE 4.10-4

CAPITAL COST BURDEN BY LAND USE
(thousands of 1991 dollars)

Land Use	Preliminary Capital Cost Allocation	Total Assessed Value	Costs as Percent of Market Value	Burden per Dwelling Unit ¹		
				Total Burden	Special Tax ²	Tax as Percent of Value
Low Density Residential	122,835	1,238,661	9.9	22,709	2,173	0.9
Medium Density Residential	165,426	1,504,440	11.0	20,782	1,989	1.1
Medium-High Density Residential	34,833	332,592	10.5	17,700	1,694	1.0
High Density Residential	11,542	55,278	20.9	17,331	1,658	2.0
Community Commercial	16,632	129,580	12.8	NA	NA	NA
Town Center	23,869	111,800	21.4	NA	NA	NA
Neighborhood Commercial	12,608	95,410	13.2	NA	NA	NA
General Commercial	9,657	74,160	13.0	NA	NA	NA
Freeway Service	7,243	48,600	14.9	NA	NA	NA
Office Commercial	6,221	156,000	4.0	NA	NA	NA
Limited Industrial	20,389	206,050	9.9	NA	NA	NA
General Industrial	4,484	63,800	7.0	NA	NA	NA
Total	435,740	4,016,371	10.8	NA	NA	NA

¹ Assumes burden is financed with bonds paid off through a special tax **or assessment**, such as assessed through a Community Facilities District. The assumed interest rate is 8.25 percent, with a 25-year term.

² Refer to Tables 4.10-1 and 4.10-3 for more detail regarding costs.

Note: NA = Not Applicable; burden per dwelling unit only examined for residential land uses, which represents the land use most sensitive to financial burden considerations.

Source: Economic and Planning Systems, Inc.

4.10 FINANCIAL IMPACTS

- The allocation of costs. *An important task for the County Planning Division would be to allocate capital costs in an equitable manner, both to properties within the project site and to properties outside of the project site (conceivably, some capital costs, such as those relating to highway improvements, would benefit properties outside of the project site). This allocation of costs should be performed prior to formation of special districts to finance services/facilities for the proposed project and prior to the specification of impact fees (e.g., fees for transportation facilities) that would be needed to pay for capital improvements.*
- Ability to pay. *The Specific Plan financing plan must ensure that capital cost burdens are reasonable and affordable for local property owners (i.e., the lien amount should not exceed 33 percent of the value of the property or property taxes and assessments should not exceed two percent of the property value).*

4.10-1(b) *At the Specific Plan stage, the County should negotiate a development agreement that obtains dedications of lands for park development, for streets, and other on-site improvements, and for other municipal-type public facilities.*

4.10-1(c) *Prior to commencement of development, the County should create a localized entity (or entities) within the project site to support public facility improvement financing and ongoing maintenance costs. Such entities include special assessment districts and Mello-Roos community facilities districts. Bonds issued under either type of district could represent an important source of revenues for infrastructure construction, contingency funds, and, in certain cases, ongoing maintenance activities.*

4.11 POPULATION, HOUSING, AND EMPLOYMENT

INTRODUCTION

This section examines the significant market and demographic issues associated with implementation of the proposed project. The specific issues associated with the project discussed in this section include:

- the jobs-to-housing balance of the project, and specifically whether the housing provided would be affordable to persons employed in the new community;
- the likely pace of development within the proposed project given market demand for residential and commercial development within San Joaquin County; and
- the market impact of the project on proposed development in Tracy.

Overview of the Jobs-Housing Concept

The jobs-housing concept is used to examine whether a region has a balance between its housing supply and its employment base. The primary functions of a jobs-housing analysis are 1) to provide a generalized measure of housing need, and 2) to indicate the potential severity of imbalance-related impacts on traffic flows and housing affordability.

A region that has too many jobs relative to its housing supply is likely to experience rapid escalations in housing prices (with a concurrent decline in affordability for the lower-income segments of the community), and intensified pressure for additional residential development. Conversely, if a region has relatively few jobs in comparison to employed residents; many of the workers are commuting to jobs located elsewhere. The resulting traffic patterns can lead to road congestion and reductions in both local and regional air quality.

Even if communities have a statistical balance between jobs and housing, they are still likely to experience sizeable levels of in-commuting and out-commuting given the existence of employment and residential opportunities elsewhere in a region. Jobs-housing analyses are therefore more useful for examining the potential for "self-containment," particularly at the County or larger regional level, than in determining whether this self-sufficiency actually exists in a community.

Methodology

The balance between population and employment is typically measured in two ways. The first is a ratio of employed residents-to-jobs, with 1.0 indicating a perfect balance between the two variables (this ratio does not account for housing affordability). A community can have a balance between jobs and housing, yet also have none of its housing stock affordable to its work force. As a consequence, the employed residents-to-jobs ratio is most appropriate for comparing jobs-housing balances between different areas, such as between cities or between a city and a larger region, such as a county. The ratio of employed residents-to-jobs is used in this analysis for describing general jobs-housing conditions in San Joaquin County, the Tracy Planning Area, the City of Tracy, and the Mountain House New Town.

The second method for measuring the balance between population and housing explicitly examines the "fit" between housing prices/rents and the incomes of the local work force. To effectively evaluate this relationship the following data are required: the types of jobs in an area, the salary ranges of these jobs, an estimate of employees per household by occupational category, household sizes and incomes, and estimates of housing prices and rents. While relatively complex, this type of analysis can reasonably identify whether a community is providing an adequate supply of affordable housing.

SETTING

Existing Jobs-Housing Conditions in San Joaquin County

Employment and housing data compiled by the San Joaquin County Community Development Department indicate that, in 1990, the County as a whole had approximately 166,900 households and 188,500 jobs (San Joaquin County, 1990). Assuming the households contained an average of ~~1.2~~ **1.1** employed persons (based upon ~~1990 data compiled for Sacramento County, which is experiencing urbanization pressures similar to those in San Joaquin County for the Stockton SMSA~~), San Joaquin County had a total of ~~200,305~~ **183,613** employed residents. The resulting ratio of employed residents to jobs is ~~1.06~~ **0.97**, implying that the County has ~~slightly more~~ **an approximate balance between** out-commuters ~~than~~ **and** in-commuters (Table 4.11-1). The out-commute is primarily toward the west, over the Altamont Pass to major employment centers in the Bay Area.

TABLE 4.11-1

EXISTING JOBS-HOUSING BALANCE - 1990 San Joaquin County

	Households	Employed Residents ¹	Jobs	Households per Job	Employed Residents per Job
City of Tracy	12,582	13,840	13,271	0.95	1.04
Tracy Planning Area ²	14,903	16,393	17,249	0.86	0.95
San Joaquin County	166,921	183,613	188,493	0.89	0.97

¹ Assumes ~~1.2~~ **1.1** workers per household for urbanizing rural regions.

² Refer to Figure 4.2-5 for boundaries of Tracy Planning Area.

Source: San Joaquin County Community Development Department, 1990; Economic and Planning Systems, Inc., 1991.

The City of Tracy's ratio of ~~1.14~~ **1.04** employed residents per job is noticeably higher than the County ratio, substantiating Tracy's attractiveness as a bedroom community for employment centers elsewhere. For the Tracy Planning Area (Figure 4.2-3), the ratio of employed residents to jobs is ~~1.04~~ **0.95**, lower than either the City of Tracy's or the County's ratio (Table 4.11-1).

Locational Attributes and Market Characteristics of Southwestern San Joaquin County

Residential Sector

Much of the recent population growth in San Joaquin County has been generated by new residents who settle in the Tracy/Manteca area and commute to jobs located west of Altamont Pass (Kroll and Morris, 1988). Although the commute distance of these households can be substantial, extending as far as to San Francisco, the relative affordability of housing in the southwestern portion of San Joaquin County appears to outweigh the increased costs associated with the commute to and from work.

Over the last decade, housing prices in the Central Valley have risen at a lower rate than those in the San Francisco Bay Area or the State as a whole (Kroll and Morris, 1988). Lower housing prices also reflect lower land prices, which allow developers to construct homes that closely match the tastes and preferences of their target markets. As a result, residential projects in the southwest portion of the County typically cater to first-time home buying households who desire to purchase a single-family detached home but cannot afford such a home closer to their work place.

A recent survey of 19 residential subdivisions in Tracy found prices that averaged \$176,000 for homes on parcels of 4,000 to 5,000 square feet; \$189,000 for homes on parcels of 5,000 to 6,000 square feet; and \$222,000 for larger ("second move-up") homes on parcels of 5,000 to 6,000 square feet (Market Directions, 1990). These sales prices were relatively constant when examined on the basis of house size, ranging from \$110 per square foot of built space for the smaller homes, to \$105 per square foot of built space for the larger homes.

As of the first quarter of 1991, tentative maps for nearly 36,000 dwelling units had been approved in San Joaquin County, representing a ten-year supply of residential land (Economic and Planning Systems, 1991). Approximately 3,800 units have been approved for development in Tracy, which represents a seven-year supply of units based on the City's 1985-90 average absorption rate of 572 units per year (Economic and Planning Systems, 1991). Vacant land in Tracy, that is currently zoned for residential uses, has sufficient capacity for an additional 13,000 dwelling units (Economic and Planning Systems, 1991).

Industrial/Service Sector

The most notable locational attribute of southwestern San Joaquin County for non-residential development is its proximity to the interstate highway system. Interstate-5 (I-5), the primary freeway that connects southern and northern California, joins I-580 (south of Tracy), connecting to the San Francisco Bay Area. Similar access to the Bay Area can also be obtained from I-5 via I-205, which joins I-5 just east of the City of Tracy (Figure 3.1).

This regional accessibility has made San Joaquin County attractive for firms that seek a strategic location for serving west-coast markets (Kroll and Morris, 1988). Distribution companies are finding the area especially desirable. Safeway Stores, for example, is currently constructing a 1.7 million square foot distribution/

warehouse facility at the Gateway Business Park, west of Tracy. Also, either planned or under construction within the area, is a 160,000 square foot distribution facility for the Market Wholesale Grocery Center, a 150,000 square foot distribution facility for Yellow Freight Systems, and a 350,000 square foot distribution facility for Orchard Supply Hardware.

Aside from accessibility to markets, the southwestern portion of the County has few if any locational attributes that significantly differentiate it from other urbanizing regions of the State that are also trying to promote economic development. Whether San Joaquin County can attract the types of high technology manufacturing facilities that have been locating in Roseville and Folsom (Sacramento County) will largely depend on whether local business park developers can offer land or quality facilities at lower prices than offered elsewhere.

With regard to retail facilities, an 835,000 square foot shopping mall is planned for a 100-acre site on the northern side of I-205, in Tracy. The Tracy Mall will be the first region-serving mall in the southwestern portion of the County, and is intended to capture local shoppers who are traveling to malls in Stockton, Modesto, and the Bay Area. Proposed anchor stores currently include Gottschalks and Mervyns.

Characteristics of Existing Residents and Housing at the Project Site

The proposed project site is located within Census Tract 52.03, which, in general, extends southward from Old River to the Western Pacific railroad, and eastward from the Alameda County line to Corral Hollow Road and, north of Larch Road, to MacArthur Drive. The proposed project site represents approximately one-fourth of the area within Census Tract 52.03.

Census data compiled for the year 1990 indicate that Census Tract 52.03 had 1,252 dwelling units and a population of approximately 3,800 persons. Although 1990 census data at the sub-tract level are not yet available, staff of the County's Community Development Department note that most of the households residing in Census Tract 52.03 are located either south or east of the project site (Factor, 1991). Year 1990 estimates of household incomes and home ownership characteristics are not currently available at the census tract level.

IMPACTS AND MITIGATION MEASURES

Although not considered significant under CEQA guidelines, the jobs-housing impacts considered important by the County are those that would result in 1) an imbalance between jobs and housing, 2) housing that is not affordable to persons employed on the project site, 3) an excessively long rate of development for commercial land at the project site, and/or 4) a siphoning of demand from the City of Tracy that might jeopardize assessment districts and other public financing commitments.

Imbalances between jobs and housing are relatively easy to measure. However, the implications of such imbalances are complex in that they both reflect and affect economic conditions within a region. Mitigation measures that are intended to promote a balance between employment and residential opportunities should

be approached with care, as their implementation may have unanticipated, and perhaps undesirable, effects elsewhere.

Although the applicant suggests that the proposed project can support certain levels of development, market evaluations prepared for this EIR indicate that both the pace of construction and the amount of land developed at build-out might be less than anticipated. Presented below are the applicant's underlying rationale for the development phasing schedule presented in Chapter 3 of this DEIR, and an evaluation of this rationale from the perspective of current and projected market conditions. Revised development projections that reflect market-constrained conditions are applied in the analysis of impacts discussed in this section of the DEIR.

Applicant's Market Justification for the Proposed Project

The applicant ties the need for the Mountain House New Town to a need for countywide economic development, stating in particular that the key to attracting additional job growth is "proper siting [and] the amenities of high density white collar businesses" (Trimark Communities, 1991). Development at the project site is planned to consist of 702 acres of commercial/industrial uses, 2,398 acres of residential uses, and 260 acres for school uses. The applicant states that buildout is projected to occur by the year 2010 (Trimark Communities, 1991).

Proposed Residential Uses

Upon completion of development, 84 percent of the proposed 16,003 homes would be single-family units (built at densities ranging between 4.5 and 8 units per acre). Assuming a 17-year development period, an average of 941 units would have to be constructed per year for buildout to occur by 2010.

The market study prepared for the applicant states that "[i]nitial housing demand at Mountain House will be largely generated by the employment growth in the major employment centers in Alameda and Contra Costa Counties" (Trimark Communities, 1991). These employment centers are anticipated by the applicant to be: the Tri-Valley region (particularly Bishop Ranch in San Ramon and Hacienda Business Park in Pleasanton); office employment growth in Walnut Creek, the Pleasant Hill BART area and Concord; and industrial and R&D development in the Fremont area. The early stages of development at the project site would therefore consist of residential construction, "followed quickly" by industrial and office development once employers presumably discover the attractiveness of the community (Trimark Communities, 1991).

Proposed Commercial and Industrial Uses

Buildout of the project's commercial and industrial acreage would generate approximately 8,456,000 square feet of space.¹ Slightly less than half of this space (4.14 million square feet) would be devoted to Limited Industrial uses and an additional 1.2 million square feet (14 percent of the total) would be designated for General Industrial uses. The applicant believes that the proposed project would prove attractive to high technology firms that are searching for lower cost but "high quality image" locations situated within a reasonable driving distance of Silicon Valley (Trimark Communities, 1991).

Commercial space consists of retail and office facilities. The applicant's market analysis states that the project's retail acreages have been sized to serve the community of Mountain House New Town and the population of the surrounding area, the size of which is undefined. These retail uses would consist of "a community shopping center, several neighborhood shopping centers, smaller local retail shops and town center office/retail/restaurant development" (Trimark Communities, 1991). Regional-serving retail facilities would not be provided; demand for the merchandise sold through this type of outlet is expected by the applicant to be met outside of the project site. The proposed land use plan would allow development of approximately 2.3 million square feet of commercial space. Approximately 783,000 square feet would be used for office facilities; the remainder would be retail stores and services.

The applicant has not presented anticipated rents or land values for the industrial and commercial components of the proposed project. An estimate of such rents and land values would not be relevant at the General Plan stage of the development process because they would not reflect the competitive environment that would occur if and when construction were to begin.

Evaluation of Market Feasibility

The market feasibility of the various land uses proposed for the project site are evaluated by examining the proposed project in relation to: 1) the locational attributes and market constraints noted earlier in this section, and, 2) rates and levels of development that are projected for the Tracy Planning Area through the year 2010. The latter projections have been formulated by Economic and Planning Systems, Inc., for the General Plan revisions that are currently being prepared by the San Joaquin County Community Development Department (Economic and Planning Systems, 1991). The projections applied in this analysis are based upon economic and population growth trends for Northern California, as well as upon an examination of development trends within the various planning areas and communities of San Joaquin County, and within the San Francisco Bay Area.

Given that the County is currently facing a number of widely varying development scenarios, ranging from focusing growth in existing cities to allowing the development of five new towns, the projections applied in this jobs-housing analysis should be considered as generally illustrative of probable market conditions rather

¹Assumes a floor area ratio (FAR) of 0.25 for all commercial and industrial land uses except Office Commercial and Limited Industrial, which are assumed to have FARs of 0.3.

than as a precise and reliable forecast. The project methodology is summarized in the Cumulative Impacts (Section 6.1) section of this DEIR.

Residential Market Feasibility

The proposed project, located just north of I-205 at the Alameda County line, is well-positioned to take advantage of the shortage of affordable single-family homes in the Bay Area. The project would attract some of the overflow demand from the Bay Area that is now being met in Tracy, Manteca, and the Modesto area. However, it is unlikely that the rates of construction anticipated by the applicant (i.e., average of nearly 1,000 dwelling units a year) would be feasible during the project's buildout period. A rate of residential development that better reflects probable future market constraints would be 700 units per year (Economic and Planning Systems, 1991), which would equal an annual absorption rate of approximately 99 acres of land as compared with the applicant's proposal of 141 acres per year (Table 4.11-2); thus by 2010, 11,900 residential units would be constructed at the site, assuming market conditions. Even these rates may be optimistic if the City of Livermore adopts the proposed North Livermore General Plan Amendment, which would allow development of as many as 19,000 homes and as much as 400 acres of industrial land. Based on these market conditions, the proposed project would require more than 21 years for its residential component to reach buildout.

The home prices proposed by the applicant are reasonable in comparison to competitive home prices available in Tracy. The applicant anticipates that medium-density homes (i.e., single-family homes on parcels of approximately 5,000 square feet in size) would sell for an average price of \$189,000 per unit (Trimark Communities, 1990); home prices (1990) for similar units in Tracy also averaged \$189,000 per unit. Lower-density homes at the project site are expected to average \$229,000 in price, only slightly more than the average price of approximately \$222,000 charged for "second move-up" homes in Tracy.

The residential sales prices anticipated by the applicant may change by the time that development of the project occurs. Competitive pressures within the region and in the Tri-Valley area (Alameda County), as well as within the project itself, would largely dictate the prices at which new homes sell or are rented.

Industrial and Commercial Market Feasibility

Estimating the demand for industrial and commercial facilities at the project site is more complex than estimating the demand for housing. The project site has no significant locational advantages compared to competitive business parks situated to the west, in the Tri-Valley area, or to the east, in the cities of Tracy and Lathrop. The Tri-Valley market is currently oversupplied with industrial facilities built on a speculative basis (Economic and Planning Systems, 1990). For example, the Hacienda Business Park in Pleasanton has begun converting some of its vacant land into residential uses.

Given these market and locational concerns, and using the employment projections that have been prepared for the County's revision to its General Plan, by the time that the proposed project's residential component is built out, the project site could reasonably have captured ~~slightly more than 5,000 workers employed in~~

4.11 POPULATION, HOUSING, AND EMPLOYMENT

TABLE 4.11-2

LAND USE PLAN ASSUMING MARKET CONSTRAINTS

			Acres Absorbed by Year 2010 ²			
			Proposed by Applicant		Assuming Market Constraints	
	Proposed by Applicant	Assuming Market Constraints ¹	Total Acres Developed	Acres Absorbed per Year	Total Acres Developed	Acres Absorbed per Year
Residential:						
Low density	1,202	1,202	1,202	71	--	--
Medium density	995	995	995	59	--	--
Medium-high density	164	164	164	10	--	--
High density	37	37	37	2	--	--
Subtotal	2,398	2,398	2,398	141	1,680	99
Commercial:						
Community commercial	62	--	62	4	--	--
Town center	43	--	43	3	--	--
Neighborhood commercial	47	--	47	3	--	--
General commercial	36	--	36	2	--	--
Freeway service	27	--	27	2	--	--
Office commercial	60	--	60	4	--	--
Subtotal	275	125 ³	275	16	90	5
Industrial:						
Limited industrial	317	--	317	19	--	--
General industrial	110	--	110	6	--	--
Subtotal	427	220 ³	427	25	150	9
Total Acres	3,100	2,743	3,100	182	1,920	113

¹ Based on countywide projections by Economic and Planning Systems for General Plan revision.

² Assumes development of the project begins in year 1993.

³ Represents acres developed at buildout of residential component.

Source: Trimark Communities, 1990; Economic and Planning Systems, Inc. (EPS), 1991.

basic industries between 33 percent and 48 percent of the private-sector employment expected for buildout (Economic and Planning Systems, 1991). Approximately 220 acres of industrial land would be required (Table 4.11-2) to accommodate these workers, assuming all of these workers were employed in light or general industrial facilities.² This level of absorption represents approximately 51 percent of the 427 acres as currently proposed by the project applicant (Table 4.11-2).

The site has no intrinsic attributes that would make it a superior location for region-serving office or retail space. As proposed, commercial facilities at the project site would primarily serve only the community itself. The employment and land use projections that have been prepared for the County's revision of its General Plan suggest that a realistic amount of commercial land for the site would be approximately 125 acres at buildout of its residential acreage, rather than the 275 acres proposed by the applicant (Economic and Planning Systems, 1991).³

Impact

4.11-1 The proposed project is unlikely to attain a balance between jobs and housing, and would exacerbate the imbalance between jobs and housing that currently exists in both the Tracy Planning Area and San Joaquin County.

The project applicant projects that the proposed project would generate approximately 19,880 jobs. Assuming approximately 1.2 workers per household,⁴ the resulting ratio of employed residents-to-jobs at the project site would be 0.97, very close to a perfect jobs-housing balance. This ratio would represent a significant change from the trend toward out-commuting that is currently occurring in the southwestern portion of the County. However, the evaluation of market feasibility indicates that the proposed project is unlikely to experience the level of job growth anticipated by the applicant. A more realistic projection of jobs created by the project would be 9,867 jobs at buildout of the residential component of the project (Table 4.11-3). This total comprises 8,730 employees in commercial and industrial land uses (Economic and Planning Systems, 1991), and 1,137 public employees (i.e., employment related to schools, recreation, and utilities, as shown in Table 3.2). The resulting ratio of employed residents-to-jobs at the project site would average

²Based on: 1) a projection of 5,030 industrial employees at buildout of the proposed project's residential component (Economic and Planning Systems, 1991); 2) 84.3 percent of this employment would be associated with Limited Industrial facilities, the remainder at General Industrial facilities (per buildout in Table 3.6); and, 3) the employment densities presented in Table 3.6.

³Based on: 1) projections of 2,000 retail employees and 1,700 service employees at buildout of the proposed project's residential component (Economic and Planning Systems, 1991); 2) 70 percent of the retail employment in Neighborhood Commercial facilities, the remainder in community or General Commercial facilities; 3) all of the service employment in Office Commercial facilities; and, 4) the employment densities presented in Table 3.6.

⁴San Joaquin County had a ratio of 1.13 jobs per household in 1989. This ratio should rise as the County continues to urbanize. Alameda County, for example, had a ratio of 1.54 jobs per household in 1989. Accordingly, a ratio of 1.2 jobs per household is used for the projection period, and is based upon Sacramento County's 1989 ratio of 1.21 jobs per household.

4.11 POPULATION, HOUSING, AND EMPLOYMENT

approximately 1.95 at buildout (assuming market constraints), indicating that the project would export one worker for every worker employed within the community. **It would be difficult to provide a balance of jobs and housing, especially in the earlier years of the project when there would be a high propensity of out-commuting.**

TABLE 4.11-3

JOBS AND EMPLOYED RESIDENTS AT BUILDOUT ASSUMING MARKET-CONSTRAINED DEVELOPMENT

Employment at Project Site ¹		Employed Residents at Buildout			
Employment Sector	Jobs	Dwelling Units at Buildout	Employees per Household	Total Employed Residents	Employed Residents per Job
<u>Commercial/Industrial:</u>					
Retail	2,000	16,003	1.2	19,204	
Service	1,700				
Basic Industries	5,030				
Public	1,137				
Total Jobs	9,867				1.95

¹ Based on market-constraint projections prepared by Economic and Planning Systems, Inc., for General Plan revision.

Source: Economic and Planning Systems, Inc., 1991.

Mitigation Measure

4.11-1 ~~A program should be formulated that ties residential development to job growth within the community. The goal of the program would result in a ratio of one employed resident per job. Monitoring of the impact mitigation program would require a report that evaluates the jobs-housing balance within the community, both as a ratio and with regard to affordability issues. The applicant(s) in cooperation with the San Joaquin County Community Development Department could be responsible for preparing the report and for ensuring compliance with the policy that the proposed project attain a jobs-housing balance. A schedule for the report can be included in the Specific Plan.~~ **The Public Services and Facilities Plan shall include a Jobs/Housing Program and Monitoring Plan. The program should include specific actions to promote and secure jobs within the community. Goals of the program should include, but not be limited to:**

- **Achievement of a ratio of one "in community" job for every employed community resident at buildout of the community, with substantial employment progress throughout the entire development period.**
- **Maximization of working community residents employed within the community.**

- **An aggressive marketing program to attract jobs.**
- **A policy of land use allocation that would optimize fulfillment of the first three policies.**

The Monitoring Plan should consist of annual reports of statistical data of the community's employment, population, land use allocations, and other data necessary to measure the recommended changes in the Jobs/Housing Program. Changes or modifications in the program may be mandated by the County after any particular annual review to ensure that the goals of the program are being fulfilled.

Impact

- 4.11-2 The proposed project may not have a sufficient supply of housing that is affordable to workers employed in the community.**

For this analysis, a model (Appendix 10.13) has been developed that relates proposed housing prices to the household incomes of the work force likely to be employed within the community. The numerical results of the model are the product of numerous calculations and assumptions, and should accordingly be viewed as representing general magnitudes rather than exact estimates.

The applicant is proposing average housing prices as follows (in 1989 dollars): \$83,000 per unit for high-density housing; \$169,000 per unit for medium-high-density housing; \$189,000 for medium-density housing; and \$229,000 for low-density housing (Trimark Communities, 1990). The majority of the housing units developed on the project site would be priced above \$189,000, with an average purchase price of \$191,300 (Table 4.11-4). Rental units and their associated monthly rents have not been identified by the applicant.

TABLE 4.11-4

PROPOSED HOME PRICES

Dwelling Unit Density	Units ¹	Percent	Average Price
Low (4.5 du/ac)	5,031	31.4	\$229,000
Medium (8 du/ac)	7,662	47.9	189,000
Medium-high (13 du/ac)	2,177	13.6	169,000
High (30 du/ac)	1,133	7.1	83,000

¹ Based on the applicant's price per unit distribution, which uses a total of 15,673 dwelling units rather than the 16,003 units currently proposed (Trimark Communities, 1990).

Sources: Trimark Communities, 1990; Economic and Planning Systems, Inc., 1991.

The majority of persons potentially employed at the proposed project site would not be able to afford the majority of the project's housing stock. As noted earlier in this section, the 19,900 employees that could be generated by the proposed project would, assuming 1.2 workers per household, form approximately 16,000 households. Using employment and income data updated from the 1980 census, the majority of these households would have incomes below \$50,000 per year (Table 4.11-5) and would therefore be unable to afford a purchase price that is more than approximately \$171,000.

TABLE 4.11-5

HOUSING PRICES BY INCOME CATEGORY

Income Category	Total Households	Percent	Maximum Affordable Purchase Price	Maximum Affordable Monthly Rent
\$0 - \$15,999	1,618	10.1	\$54,999	\$399
\$16,000 - \$29,999	3,109	19.4	\$102,999	\$749
\$30,000 - \$49,999	5,091	31.8	\$170,000	\$1,249
\$50,000 - \$69,999	3,496	21.8	\$239,999	\$1,749
\$70,000 - \$99,999	1,964	12.3	\$341,999	\$2,499
\$100,000 and Over	727	4.6	NA	NA
Total	16,005	100.0		

Notes: NA = Not applicable to affordability analysis.

Source: Economic and Planning Systems, Inc., 1991.

The project, as proposed, would provide no housing affordable to on-site employees who earn less than \$16,000 per year, although as many as 1,600 of these units could be needed if a balance between employed residents and jobs is attained by buildout (Table 4.11-6). Likewise, an insufficient supply of housing would be provided for households earning between \$16,000 and \$50,000 per year; the deficit of affordable housing for this group could total as many as 4,890 units at buildout.

In the context of the jobs to housing analysis, a potential oversupply of units indicates that commercial and industrial development within the proposed project might not generate a sufficient number of households able to afford the units proposed. As a consequence, residential developers would take one or more of the following actions: 1) not build the housing units in question; 2) build these units, but reduce their price so as to make them affordable to persons employed within the community; or 3) market the units to persons who work outside of the community but who can afford the home prices as proposed. The latter option would, of course, defeat the purpose of balancing jobs and housing within the community.

TABLE 4.11-6
NET HOUSING DEFICIT BY INCOME CATEGORY

Annual Income	Housing Need	Housing Supply	Surplus/ (Deficit) of Housing
\$0 - \$15,999	1,618	0	(1,618)
\$16,000 - \$29,999	3,109	1,133	(1,976)
\$30,000 - \$49,999	5,091	2,177	(2,914)
\$50,000 - \$69,999	3,496	12,693	9,197 ²
\$70,000 - \$99,999	1,964	0	(1,964)
\$100,000 and Over ¹	727	0	(727)
Total	16,005	16,003	(2)

- ¹ Not applicable to an affordability analysis.
² For those earning \$50,000 - \$69,999, there is a significant surplus of housing.

Source: Economic and Planning Systems, Inc.

Affordability could also be adversely affected by potential market and price influences of the golf courses proposed for the project site. Homes abutting golf courses represent a type of product that attracts buyers, such as retirees, who are seeking a specific amenity rather than a location. These types of buyers are a market niche that can represent a net addition to the Tracy area, inasmuch as they might not have otherwise moved to the southwestern portion of the County. The price influence is manifested by the amount a buyer is willing to pay to be located on or near a golf course. This premium can add more than 40 percent to a home price (McElyea, *et al.*, 1991). The overall effect of these market and price influences could be to raise average housing prices above the levels indicated by the applicant, reducing the affordability to persons employed in the new community.

Mitigation Measure

4.11-2(a) *Each phase of development should be required to include a sufficient quantity of housing that is affordable to workers employed in the community. The necessary quantity and price ranges of this housing should be determined prior to the approval of each phase of development. Overall, a minimum target for affordable units of 25 percent of total residential units should be achieved. Monitoring of the impact mitigation program would require a report that evaluates housing affordability for persons employed within the community. The applicant(s) in cooperation with the San Joaquin County Community Development Department should be responsible for preparing the report and for ensuring compliance with the policy that the proposed project attain a jobs-housing balance.*

- 4.11-2(b) Some of the projected shortfalls in affordable housing could be eliminated through the construction of more multi-family rental housing as replacement for some of the excess housing in the less affordable range. Housing for low and very-low income households, however, may require some form of subsidy to ensure its development.**

Impact

- 4.11-3 The least-expensive housing proposed for development at the project site may not be affordable for low-income residents of San Joaquin County.**

One of the policies that the County is applying to new communities is that they must provide "a variety and choice of housing for all socio-economic segments of the community" (San Joaquin County, 1990). Although the proposed project would include housing at a variety of densities and prices, this housing may not be affordable to low-income households.

The average price for high-density, owner-occupied housing at the project site is expected to average \$83,000 per unit (Trimark Communities, 1991). The monthly carrying cost at this price would be approximately \$698, which would only be affordable to the County's low-income families if they paid more than 30 percent of their monthly income for housing (Table 4.11-7). Much of the high-density housing would be built as rental units. Although an equivalent rent has not been provided by the applicant, it would likely be less than the carrying cost for an owner-occupied unit given that prices for the latter tend to have a premium that reflect their value as an investment.

TABLE 4.11-7

**HOUSING AFFORDABILITY FOR LOW INCOME RESIDENTS
OF SAN JOAQUIN COUNTY**

	Family Size (Number of Persons)			
	2	3	4	5
Income ¹	\$20,700	\$23,250	\$25,850	\$27,450
Affordable monthly housing payment ²	\$518	\$581	\$646	\$686
Lowest housing cost at project ³	\$698	\$698	\$698	\$698

¹ The incomes shown are for low-income families in the Stockton SMSA as of 1990, and are 80 percent of the SMSA median as defined by the U.S. Department of Housing and Urban Development.

² Assumed to be 30 percent of gross monthly income.

³ Based on an average price of approximately \$83,000 (per applicant) for high-density housing at Mountain House. Also assumes that this housing is purchased using a 30-year loan for 80 percent of the housing cost at an interest rate of 10 percent. Property taxes and Community Services District (CSD) fees are added, and are assumed to total 2 percent of the purchase price.

Source: Economic and Planning Systems, Inc., 1991.

Mitigation Measure

4.11-3 *The County should develop guidelines for an affordable housing plan for new communities. This plan should be part of the required Specific Plan and should be geared towards the unique housing mix requirements of a new town. It should be sensitive to the long term housing needs of the community. For example, even if there is no retirement housing planned initially, long term residents may create that demand in 20 years or so.*

Impact

4.11-4 **The proposed project would capture demand for some residential and nonresidential land uses that would otherwise go to the City of Tracy.**

Without the proposed project, the majority of un-met demand for residential, commercial, and industrial development would likely have gone to Tracy given its proximity to the East Bay. Other communities that would also have received some of this growth are Manteca, Lathrop, the Byron area in Contra Costa County, and the Modesto area in Stanislaus County. The project would thus reduce residential and industrial development pressure on these communities, and accordingly slow their potential rate of growth.

For the City of Tracy, the worst-case impact would occur if all of the development at the project site captured the growth that would otherwise have gone in the City of Tracy. Assuming that by the year 2010 Tracy would, without the competitive effect of the proposed project, add 22,177 dwelling units to its estimated 1990 supply of 12,582 dwelling units (Table 4.11-8), then development of the project would reduce this increment by 10,500 units (45 percent). Employment growth in Tracy would likewise be reduced. The jobs captured at the proposed project could result in a drop of 5,740 workers (15 percent) out of the total 37,562 persons that are projected to be employed in Tracy by the year 2010.

TABLE 4.11-8

**IMPACT OF THE PROPOSED PROJECT
ON CITY OF TRACY IN YEAR 2010**

	Households	Population	Jobs
<u>City of Tracy:</u>			
Projected 2010 ¹	34,759	94,824	37,562
Estimated 1990 ²	12,582	38,646	13,271
Net Change 1990-2010	22,177	56,178	24,291
<u>Mountain House at Year 2010:</u>	10,500 ³	28,631	5,740
Net Impact on Tracy ⁴	11,677	27,547	18,551

¹ From projections by the San Joaquin County Community Development Department, prepared June 1990.

² From projections prepared for San Joaquin County General Plan by Economic and Planning Systems, (1991). Reflects market-constrained development.

³ Assuming market constraints identified in text, of 700 units per year for 1995-2010.

⁴ Assumes all development at Mountain House would otherwise have located in Tracy (represents maximum potential impact).

Source: San Joaquin County Community Development Department, 1990; Economic and Planning Systems, Inc., 1991.

To the extent that the proposed project successfully draws households into San Joaquin County that might not otherwise have moved there, Tracy might experience additional pressure for development of regional retail and other population-serving facilities. Tracy would be the preferred location for these facilities because the community occupies a central position within the market area.

By increasing the competitive supply of housing in San Joaquin County, the proposed project could improve the affordability of housing within the region. Likewise, population-serving jobs might be generated that could improve, albeit slightly, the jobs-housing balance in the Tracy Planning Area.

The actual impact to potential growth in the City of Tracy might be less than indicated in Table 4.11-8 given that developers would continue to build and compete in both locations, which would draw to Tracy households and, to a lesser extent, businesses that: 1) would otherwise have been captured by neighboring communities in San Joaquin Valley (such as Manteca and Modesto); or 2) would now be attracted to the area as a result of low prices and other purchase/rental incentives offered by developers in order to move their product.

Mitigation Measure

- 4.11-4 *The reduction of population and employment growth in Tracy that results from implementation of the proposed project cannot be mitigated unless the project is denied, or the project becomes part of the City of Tracy.*

4.12 PUBLIC HEALTH AND SAFETY

SETTING

A preliminary assessment of the project site for potential environmental hazards associated with the past and current handling or storage of hazardous materials was prepared for the applicant by Earth Systems Environmental, Inc. (ESE) in 1990. The following analysis presents a summary of potential environmental hazards identified by the ESE assessment and additional information obtained by the authors of this DEIR.

Regulatory Framework Regarding Hazardous Materials and Wastes

The management, transportation, and disposal of hazardous materials and wastes in San Joaquin County are regulated by the U.S. Environmental Protection Agency, U.S. Department of Transportation, California Department of Health Services, California State Water Resources Control Board and Regional Water Quality Control Board, California Highway Patrol, and the State Fire Marshal. In addition to these Federal and State agencies, the San Joaquin County Public Works Department, County Community Development Department, County Office of Emergency Services, County Agricultural Commissioner, County Environmental Health Division, County Air Pollution Control District, and local fire departments are also responsible for various aspects of management of hazardous materials and wastes within the County. The jurisdiction and responsibilities of these regulatory agencies are summarized in Appendix 10.14.

Potential Sources of Public Health and Environmental Hazards

Numerous potential sources of public health and environmental hazards are associated with the current and past land uses at the project site. These sources include:

- fuel tank usage;
- historic and recent pesticide and/or herbicide use, storage, and disposal;¹
- potential salt accumulation from agricultural land uses;
- discarded drilling mud from the abandoned natural gas wells;
- spills and leakage from existing and abandoned fuel pipelines;
- possible presence of polychlorinated biphenyls (PCBs) in power transformers; and
- electromagnetic fields generated by electrical overhead transmission lines.

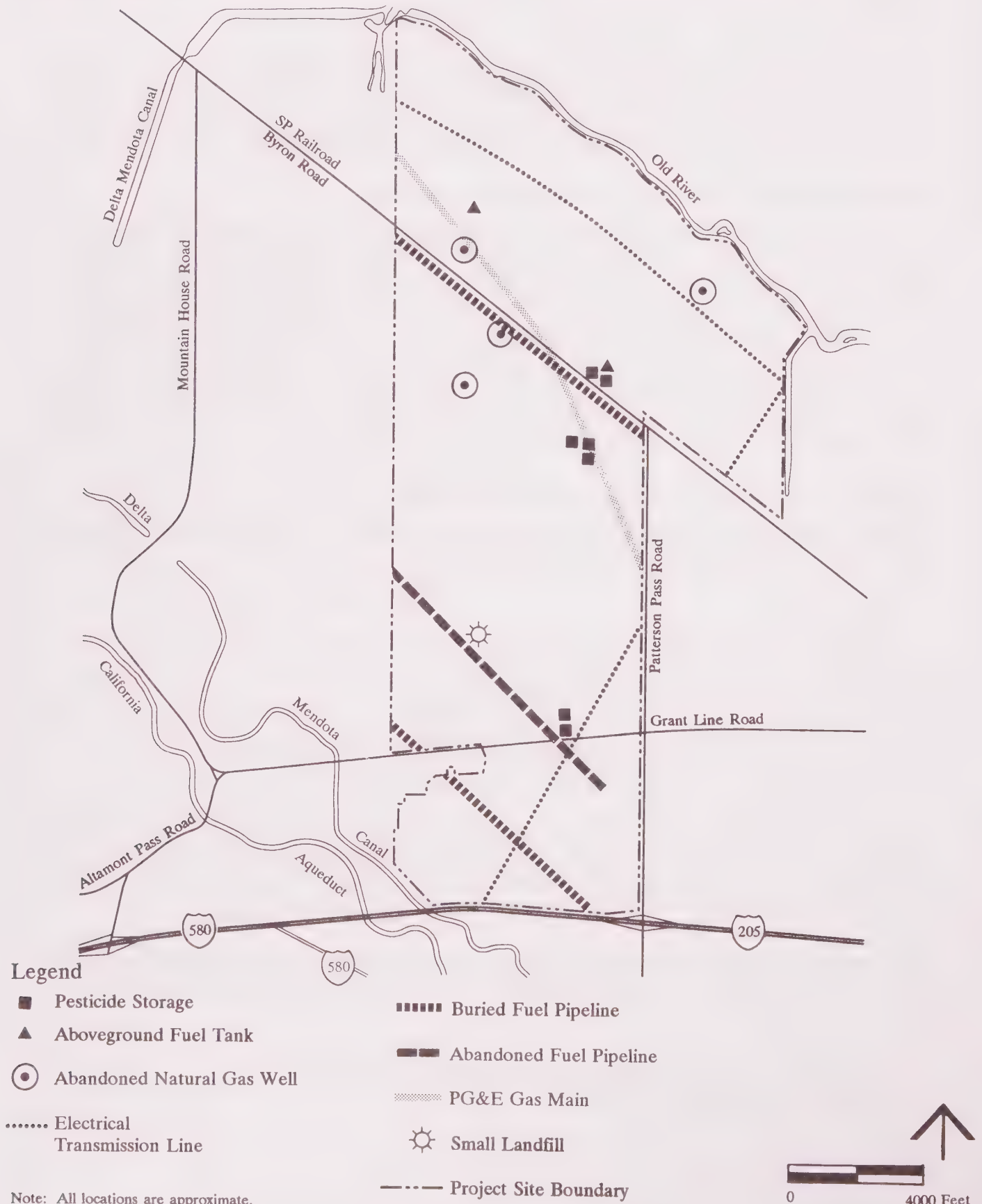
In addition, it is possible that existing buildings at the project site might contain asbestos, which could pose a health risk to construction workers and/or the general public during demolition or renovation. The approximate locations of known fuel storage tanks, pesticide storage sheds, abandoned natural gas wells, abandoned fuel pipelines, gas mains, and transmission lines are shown in Figure 4.12-1.

Regulatory agencies maintain records regarding sites with potential or known hazardous material and/or waste contamination. Federal and State agency data lists were reviewed for the project site to determine if any

¹The current and past land uses on the site are primarily agricultural. The surrounding land uses are also primarily agricultural with minor residential development.

POTENTIAL ON-SITE SOURCES OF PUBLIC HAZARDS

Figure 4.12-1



known areas of contamination were present within or adjacent to the project site (Appendix 10.14 contains an enumeration of the agency records).

The Federal and State agency lists did not identify any reported releases of hazardous materials or wastes on or within one-half mile of the site. The San Joaquin County Environmental Health Division (EHD) and the Agricultural Commissioner's office were contacted by the DEIR authors to identify any records available pertaining to the presence of hazardous materials on the site. No releases of hazardous materials or wastes within the project site have been reported to the local agencies. However, the EHD indicated that petroleum hydrocarbon releases are often associated with buried fuel pipelines, similar to those that cross the site (Cotulla, 1991).

Fuel Tanks

Seven aboveground fuel storage tanks have been identified within the project site. The tanks range from 550 to 2,500 gallons in capacity and are used to store fuel for farm equipment. Evidence of leakage or spills has been observed in the vicinity of three of the tanks (Earth Systems Environmental, Inc., 1990). Fuel releases from these tanks could have resulted in impacts to the subsurface soil and groundwater quality (Earth Systems Environmental, Inc., 1990). Because the tanks are stored aboveground, it is possible that they have been moved from other locations where unauthorized releases may have occurred. No underground fuel storage tanks have been identified on or within one-half mile of the project site (Kaufman, 1991).

Agricultural Land Use

The primary types of crops grown on and near the project site include alfalfa, sugar beets, and corn (Earth Systems Environmental, Inc. 1990). The types of herbicides used prior to growing these crops typically include paraquat, 2,4-DB amine, 2,4-D, and Diacamba. Pesticides used on these crops could include organophosphates, Thiodan (chlorinated hydrocarbon), Carbamate (7) (temite), and Furdan. Table 4.1-2 identifies the brand names of herbicides and pesticides known to be used on the project site. In addition to these pesticides, zinc phosphide or strychnine bait may have been used for rodent control (Duran, 1991). The soils, shallow groundwater, and surface waterways at the site might be affected by the use, storage, and disposal of these chemicals, as well as aerial spraying on adjacent fields. Aerial spraying of fields adjacent to the project site may pose public health risks due to inhalation or skin contact of pesticides. Aerial spraying is also discussed in Section 4.1 of this DEIR.

Irrigation practices may have resulted in a buildup of salt concentration in surface and groundwater, since calcium, sodium, and boron salts have been identified in water wells within the project site (Duran, 1991). Nitrates may have accumulated in the soils from fertilizer use and bacterial contamination from livestock wastes.

Two dairies are currently operated in the east-central portion of the project site. Infiltration of surface waters through the soils in the dairy area could potentially become contaminated by nitrate accumulation. Water wells used for domestic or irrigation purposes may provide conduits for contaminants to migrate to the

groundwater. Irrigation canals and ditches which cross the site may also provide avenues for contaminant migration.

Abandoned Natural Gas Wells

Four exploratory natural gas wells were drilled at the project site and were subsequently abandoned in accordance with applicable regulations (Earth Systems Environmental, Inc., 1990). However, it is possible that drilling sumps, used to contain drilling mud during well construction, remain buried on-site near the abandoned well heads. If drilling muds were present, the drilling mud could contain high concentrations of heavy metals and oil-based compounds (Earth Systems Environmental, Inc., 1990). If bermed drilling mud pits were present (possibly within a 200-foot radius of a well) soil and groundwater quality may have been impacted.

Fuel Pipelines

Two existing and one abandoned fuel pipelines traverse the project site (Figure 4.12-1). Leaks or spills associated with these pipelines could have affected the subsurface soil and groundwater quality at the site. No leaks or spills at these lines have been reported (Cotulla, 1991; Kaufman, 1991), but excavation in the vicinity of the pipelines might uncover unknown releases, exposing workers to hazardous materials and associated health and safety risks.

Electrical Overhead Transmission Lines

Two electrical overhead transmission lines traverse the project site (Figure 4.12-1). The Weber-Herdlyn 60 kilovolt (kV) transmission line, with a 30-foot wide easement, runs northwest to southeast across the northern portion of the project parallel to Old River. The Rio Oso-Tesla 230 Kv transmission line with a 75-foot wide easement runs southwest to northeast across the southeast portions of the project site and the site's northeast corner. A proposed Rancho Seco-Tesla 500 Kv overhead transmission line would be located adjacent to the Rio Oso-Tesla line, if constructed (see Gas and Electricity Section 4.4.4), and would be located within a proposed 200-foot **(approximate)** easement.

One hazard associated with ~~electrical transmission lines~~ **transformers connected to distribution circuits** within the project site is the presence of old transformers that use mineral oil as the heat-moderating fluid (Earth Systems Environmental, Inc., 1990). These transformers may contain polychlorinated biphenyls, or PCBs, which are a class of chemicals that tend to persist in the environment, accumulate in human body tissues and the food chain, and cause cancer in test animals. PCBs are strictly controlled by the EPA.

A nuisance effect associated with the electrical transmission lines within the project site that could affect public health and safety is the induction effect. Objects near any one of the transmission lines (e.g., a fence) could develop an electric charge. If an object is not adequately grounded, current would flow through the object and human contact with that object could cause a shock upon contact. Induced currents from

transmission lines can also interfere with certain older models of cardiac pacemakers (California Public Utilities Commission, 1990).

Recent studies indicate that electromagnetic fields (EMF), such as those generated by transmission lines, may have adverse human health impacts; however, the studies are inconclusive. Electric and magnetic fields are generated whenever electricity is being conducted. Sources of EMF include: wiring in homes; electrical appliances; electrical distribution lines that bring power from transmission lines to homes; and high voltage transmission lines.

EMF formerly were thought to be relatively harmless as compared with other forms of electromagnetic energy such as x-rays (capable of breaking molecular bonds to cause cancer) and microwaves (capable of heating body tissue under conditions of extreme exposure). Laboratory experiments have shown that EMF can have biological effects at the cellular level and in animals; however, no studies exist that show direct evidence of human health effects.

Past and on-going studies investigating the linkage between EMF exposure and cancer in humans have focused on childhood leukemia (Wertheimer, *et al.*, 1979; Savitz, *et al.*, 1988). In these studies, a strong correlation appears to exist between childhood leukemia and proximity to electrical distribution lines which generate EMF. These studies only indicate a positive statistical association and by no means prove a causal relationship. Occupational studies of adult exposures in the work place are also underway. However, these exposure levels typically would be greater than those experienced in residential settings, and may not reveal sufficient information about risks associated with sensitive population groups such as the elderly or children.

A recent study by the University of Southern California (Peters, *et al.*, 1991) investigated the possible influence of electric and magnetic fields on the development of childhood leukemia. The study involved a larger number of subjects and more precise field measurements than previous studies of the problem. The study found that there was no association between any measure of electric field exposure and the risk of childhood leukemia; the association between magnetic fields and leukemia, however, remained unclear. There was a statistically significant (odds ratio of about 2.5) association between wiring configuration and childhood leukemia, where wiring configuration was a measure of exposure. The study also found a statistically significant association between wiring configuration and magnetic field measurements. The association between magnetic field measurements and childhood leukemia was not, however, statistically significant.

Currently, no health-based standards for EMF exposure exist because it is not possible to identify field strengths at which health effects are unlikely to occur. Biological effect "windows" have been observed where both low and high field strengths failed to produce an effect produced at some intermediate range. Thus, a stronger field may not necessarily pose a greater hazard than a weaker one. Further complicating the ability to set health-based standards for EMF exposure is the absence of a scientific model of the mechanism by which EMF exposure might affect humans (i.e., what aspect of fields is important in determining human

risks from exposure, such as the average peak field strength, peak current induced in the body, or time spent in the field).

The lowest field strengths for which a well-designed epidemiological study has reported a correlation with health effects were identified in a study by Savitz in Denver, Colorado, where measures of EMF exposure were based on electric power consumption levels in the home, and proximity to distribution lines and high-voltage transmission lines (U.S. Office of Technology Assessment, 1989). The study showed above-average rates of childhood cancer and leukemia for the group of children exposed to magnetic fields measuring 2.5 milligauss, or mG, and higher (an increased risk of 20 to 60 percent above the controls for all cancers). Slightly raised rates of leukemia were also found at lower exposure levels, in the range of 1 mG to 2.49 mG. For the purpose of comparison, the strengths of magnetic fields at varying distances from electrical power

lines and appliances are shown in Figure 4.12-2. The figure shows field strengths for a higher voltage transmission line than any existing or proposed lines in the project site.

In response to the growing body of studies that indicate the potential for health effects from EMF exposure, ~~the California Legislature enacted SB 920 in 1991 which requires the Public Utilities Commission (PUC) and the California Environmental Protection Agency, Division of Toxic Substances Control (DTSC) to jointly conduct high priority research projects to identify and mitigate health risks. This legislation also directs the PUC to implement~~ an interim policy **strategy** of "prudent avoidance" of exposure to EMF ~~generated by utilities. "Prudent avoidance" is a strategy first coined~~ **has been suggested** by a Carnegie Mellon University public policy research group in their report to the U.S. Congress on the biological effects of EMF (U.S. Office of Technology Assessment, 1989). The strategy recommends that, as a matter of prudence, measures that would not incur economic hardship (e.g., by the consumer, public agency, or utility) should be taken to reduce EMF exposure, where feasible. Various agencies and institutions have adopted the prudent avoidance strategy in recognition of the fact that costly mitigation measures may not serve to reduce the perceived "hazard." If EMF exposure were proven to be a health hazard, then other sources of EMF, such as electrical distribution lines (underground as well as overhead), electrical appliances, and home wiring, would have to be addressed as well.

The California Department of Education has established setbacks for new school sites near high-voltage power transmission line easements. These setbacks are not based on health standards and do not apply to existing schools. They are as follows (California Department of Education, 1989):

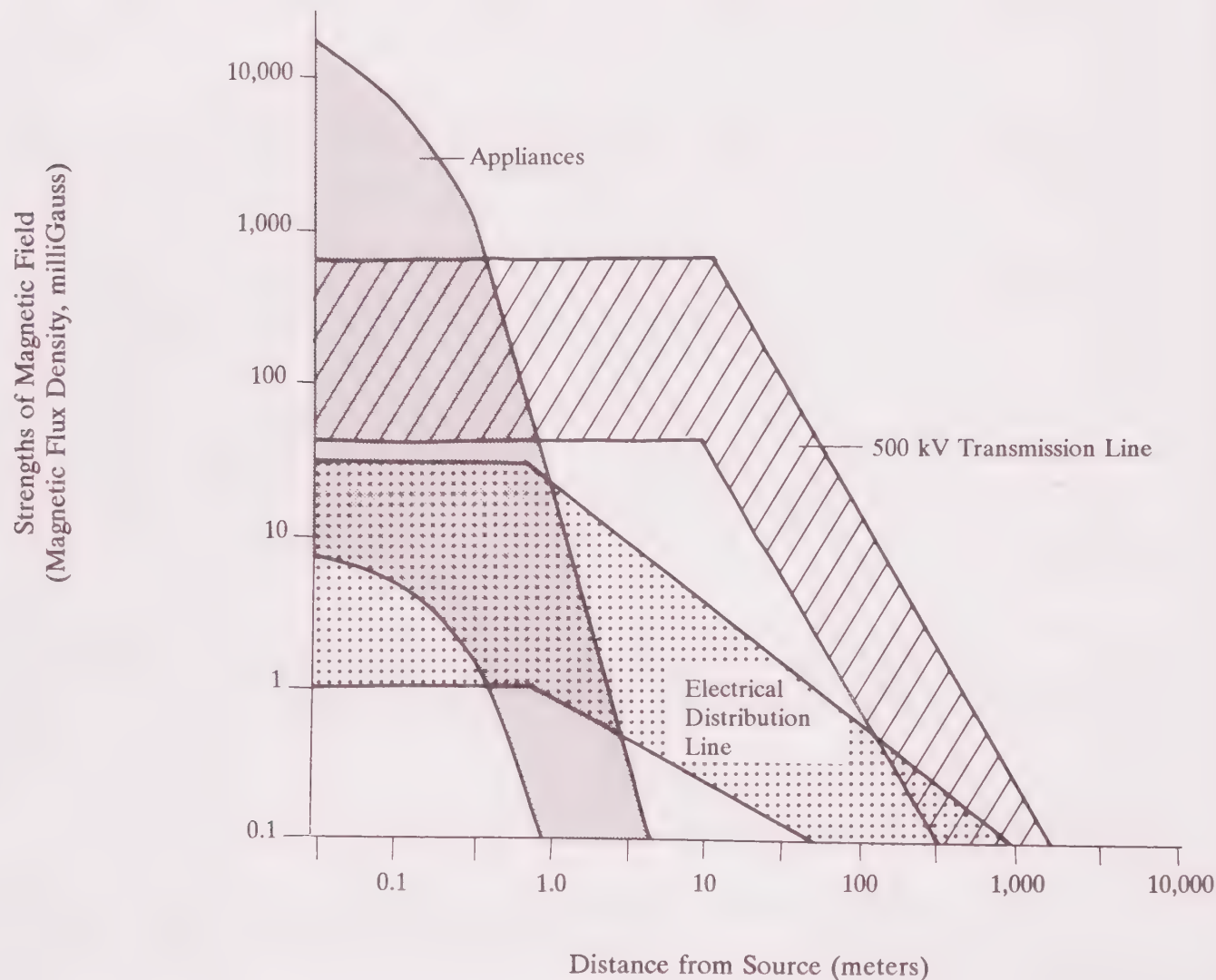
- 100 feet from edge of easement for 100 to 110 Kv line,
- 150 feet from edge of easement for 220 to 230 Kv line, and
- 250 feet from edge of easement for 345 Kv line.

The Department of Education also requires that the necessity for siting a school near a power line easement be assessed and alternative options considered. Future plans by the utility company to increase voltage or add lines also should be a factor in the siting decision.




Several states have established limits on the strengths of electric and magnetic fields from high-voltage transmission lines (Table 4.12-1). These limits are based, in some cases, on existing measured strengths along existing lines.

Potentially Hazardous Building Materials

Asbestos was a common component of building materials in the past. Several of the existing farm structures may contain asbestos-containing materials. If any buildings currently at the project site were to be demolished or renovated, asbestos might be exposed, creating a health risk for construction workers and/or the general public.



Legend

-  Range of Field Strengths for 500 kV Transmission Line
-  Range of Field Strengths for Electrical Distribution Line
-  Range of Field Strengths for Appliances

Note: This figure shows how the magnetic field strength at ground level decreases with increasing horizontal distance from three common sources of electromagnetic fields (EMF). The bands represent variation across individual sources in each group.

Sources: U.S. Office of Technology Assessment, 1989.

Land Disposal Areas

A small landfill containing household debris is located in the southern portion of the site (Earth Systems Environmental, Inc., 1990). It is unclear whether the dump has received small quantities of hazardous materials and/or waste that could affect local soil and shallow groundwater quality. Reportedly, the dump contains scrap metal, wood, car and truck tires, some household garbage, concrete slabs, and a camper shell (Earth Systems Environmental, Inc., 1990). The lateral and vertical extent of the dumped materials are unknown.

TABLE 4.12-1

**REGULATORY LIMITS ON FIELD STRENGTHS
ON TRANSMISSION LINE RIGHTS-OF-WAY**

State	Field Limit
Montana	1 kV/m at edge of RoW in residential areas
Minnesota	8 kV/m maximum in RoW
New Jersey	3 kV/m at edge of RoW
New York	1.6 kV/m at edge of RoW, 200 mG at edge of RoW
North Dakota	9 kV/m maximum in RoW
Oregon	9 kV/m maximum in RoW
Florida	10 kV/m (for 500 kV), 8 kV/m (for 230 kV) maximum in RoW
	2 kV/m at edge of RoW in all new lines
	200 mG (for 500 kV single circuit), 250 mG (for 500 kV double circuit) and 150 mG (for 230 kV) maximum at edge of RoW

Source: U.S. Office of Technology Assessment, 1989.

IMPACTS AND MITIGATION MEASURES

Impacts to public health and safety are considered significant in this analysis if the proposed project construction directly or indirectly were to create a potential public hazard, or involve the use, production, or disposal of materials that could pose a hazard to the public or environment.

Impact

4.12-1 Potential past or future releases of fuel products from storage tanks and/or pipelines may result in environmental degradation and public health hazards.

Fuel releases have been identified at three existing aboveground fuel storage tanks within the project site. In addition, petroleum hydrocarbon releases have been noted in association with buried fuel pipelines in areas outside of the project site. During project construction, workers could be exposed to soil and groundwater contaminated by fuel products. This exposure could occur during excavation or dewatering activities in areas where storage tanks and pipelines are currently or were formerly located. If groundwater resources were contaminated and were used for domestic or irrigation purposes, the public health could be affected. Contaminants contained within the groundwater could migrate to surface waters, exposing the public and wildlife to potential health risks.

Mitigation Measures

- 4.12-1(a) *Preliminary site assessments, in accordance with the requirements of the County Environmental Health Department, should be undertaken by a qualified professional in areas of known or suspected fuel releases, prior to development.*
- 4.12-1(b) *Any contamination identified by the preliminary assessments should be investigated and remediated, if required, prior to construction to reduce potential exposure of construction workers and the public to hazardous materials and to prevent further environmental degradation. Remediation of soils could include excavation and on- or off-site treatment or disposal or in-place treatment of the affected soils.*
- 4.12-1(c) *If the groundwater had been affected by fuel releases, remediation could be required. Such remediation could include: groundwater extraction and treatment; disposal of the treated water to surface waters; or reinjection into the groundwater. Extraction of groundwater without reinjection could affect the water resource supplies in the area.*
- 4.12-1(d) **The location of all existing and abandoned fuel lines should be established in the Specific Plan so that any required setbacks can be incorporated.** *Prior to construction near the existing and abandoned buried fuel lines, the location of the lines should be accurately further established (e.g., accurate maps from the owner and/or operator or geophysical surveys).*
- 4.12-1(e) *All construction near the existing or abandoned fuel lines should be undertaken following a site-specific health and safety plan to protect the welfare of the workers. If contamination were identified, investigation and remediation should be undertaken in accordance with the requirements of the County and the Regional Water Quality Control Board.*
- 4.12-1(f) *Construction at the locations of aboveground fuel storage tanks should occur in accordance with site-specific health and safety plans unless it has been previously determined that releases have not occurred from the operation of the tanks. Such determination could be made by inspection of the tanks and/or soil sampling under or near the tanks.*
- 4.12-1(g) **The applicant should obtain the approval of owners of buried fuel pipelines that cross the project site for construction and development plans.**

4.12 PUBLIC HEALTH AND SAFETY

Impact

4.12-2 Public and environmental health may be affected by potential historic pesticide and/or herbicide residues in the environment.

Agricultural uses of the project site and adjacent areas may have resulted in the accumulation of pesticides and/or herbicides in the soil, surface water, and/or groundwater from direct and future aerial spraying of adjacent agricultural lands or aerial applications. Health impacts may occur by children ingesting contaminated soil, exposure by skin contact with affected soils or water, or inhalation of airborne dust from affected soils. Spraying of pesticides and/or herbicides could also result in public health impacts. Aerial application of pesticides and herbicides is also discussed in Section 4.1 of this DEIR. The costs of

4.12 PUBLIC HEALTH AND SAFETY

remediation of contaminated soils could have significant impacts on financing plans, which should be addressed in the Specific Plan.

Mitigation Measures

- 4.12-2(a) *A preliminary assessment of the presence of chemical residues from pesticide and herbicide use should be completed by a qualified professional prior to approval of the Specific Plan.*
- 4.12-2(b) *Specific areas where pesticides and herbicides were stored, handled, or disposed of should be investigated prior to **construction at development of the Specific Plan for the project site.***
- 4.12-2(c) *If chemicals were detected at concentrations that could pose a risk to the environment, remediation of the affected areas should be undertaken prior to project construction. Remediation should be conducted in accordance with the requirements of either the California Department of Toxic Substances Control and/or the Regional Water Quality Control Board. Remediation could include soils removed to a permitted landfill, on-site treatment and on- or off-site disposal, or placement of affected soils in areas that would not provide exposure to users of the site.*
- 4.12-2(d) *Pesticide- and herbicide-containing soils (with concentrations in excess of regulatory action levels) should not be placed or exposed in residential development areas where residents could be exposed to the chemicals through ingestion, inhalation, or skin contact.*
- 4.12-2(e) *Following grading activities in residential areas, the applicant should demonstrate to the County that exposed soils do not contain pesticides or herbicides in excess of regulatory action levels.*
- 4.12-2(f) *To reduce the potentially adverse effects of aerial pesticide spraying on the health of residents and employees of the project site, a 1,000-foot wide buffer zone should be established along the western site boundary **or aerial spraying shall be restricted.***

Impact

- 4.12-3 **The surface water and groundwater may have been affected by past agricultural uses on and adjacent to the site, which could affect future users of the site. These waters could continue to be affected by on-site dairy operations until Phases III and IV of the proposed project.**

Surface and groundwater quality at the project site may not meet drinking water standards due to the excessive concentration of salts that may have resulted from irrigation practices. Degradation of water quality may also have resulted from mismanagement of livestock wastes. Such degradation could continue until Phases III and IV of the project when the dairies are expected to be replaced by urban uses.

Mitigation Measures

- 4.12-3(a) *For those areas on the project site supporting livestock, livestock waste management controls should be established to control runoff. Such controls could include limiting livestock access to surface water and containerizing the wastes to prevent leaching to the groundwater.*
- 4.12-3(b) *Any domestic or irrigation wells that are not in use, or do not have effective sanitary seals, should be abandoned prior to project construction to prevent the wells from acting as conduits for contaminants migrating from the surface to the groundwater.*

Impact

- 4.12-4 **Soil and water may be contaminated from heavy metals and oil-based compounds remaining from abandoned natural gas well drilling muds and could affect future users of the site.**

Drilling muds, used during the drilling of natural gas wells, were stored in excavated areas near the well heads. The drilling muds may contain heavy metals and oil-based compounds. It is unknown whether the drilling muds still remain on the project site. Discovery of the drilling muds during excavation activities may expose construction workers to health risks. If the drilling muds were exposed in areas frequented by children, these children may be exposed to health risks through ingestion or skin contact. The heavy metals and oil-based compounds may leach to the groundwater and impact water quality.

Mitigation Measure

- 4.12-4 *The area within a 200-foot radius of each of the five abandoned natural gas well heads within the project site (Figure 4.12-1) should be investigated by a qualified professional to determine if the drilling muds are present and, if so, whether concentrations of heavy metals and oil-based compounds are present at concentrations that may affect public and environmental health. If the muds contain concentrations of chemicals above regulatory action levels, the drilling muds and any adjacent affected soil should be removed and/or remediated in accordance with regulatory requirements. The investigation should occur prior to ~~development of the Specific Plan~~ **tentative approval of any development permits**. Removal and/or remediation of contaminated soils should occur prior to project construction in the vicinity of the well heads.*

Impact

- 4.12-5 **Potential health impacts may result from public exposure to PCBs associated with transformers or electromagnetic fields associated with overhead electrical lines.**

Older electrical transformers may contain residual PCBs which are a potential health and environmental hazard. A release of PCBs conceivably could occur from damage to transformers that contain PCBs from weather, vandalism, equipment failure, or during maintenance activities. The impact of induction effects from

proximity to transmission lines is primarily one of nuisance, with the exception of interference with cardiac pacemakers, which could be significant.

The human health impact of EMF generated by the on-site existing and proposed transmission lines cannot be evaluated at this time, but could be significant. Information on electric and magnetic field strengths to which people adjacent to the easements for the Weber-Herdlyn or Rio Oso-Tesla lines would be exposed (from the lines) currently are not available. Field strengths can be measured with instrumentation. Field strengths would have to be measured for a variety of load parameters for each of the lines, however, to obtain a more accurate profile of possible exposures, since loading (and therefore field strengths) vary seasonally. Alternatively, field strengths of overhead transmission lines can be calculated with a high degree of accuracy, for a range of loading conditions (including future anticipated loads) using available computer software (Hooper, 1991).

Since there are no scientific or regulatory criteria or standards for EMF health impacts, it would not be possible to assess the significance of identified exposure profiles. It is also not possible to determine that existing and proposed easement widths are inadequate. Nevertheless, information on the health issues of EMF exposure (from all sources), and the exposure profiles from overhead transmission lines in the project site should be provided to individuals who may reside or work nearby, to enable them to take measures to avoid exposure, based on a personal assessment of risks. Extensive research currently is being conducted to identify potential health impacts of EMF exposure (Appendix 10.15). The findings from these studies may be able to provide guidance in the future on appropriate measures to take to minimize potential risks from EMF exposure.

Proposed land uses adjacent to transmission line easements would be residential, open space, public or institutional, parks, a high school (for proposed Rancho Seco-Tesla line only), and an elementary school (Rio Oslo-Tesla line only). An open space corridor has been proposed for a portion of the transmission line easement south of Grant Line Road (Figure 3.7)

Mitigation Measures

- 4.12-5(a) *The applicant should request information from PG&E on the presence of any transformers containing PCBs ~~on the Weber-Herdlyn or Rio Oso-Tesla lines~~, and any records of spills from such equipment. If PCB-containing equipment (50 to 500 parts per million PCBs in the oil) or PCB equipment (over 500 parts per million) were identified, this equipment should be replaced with non-PCB containing equipment. Any identified spill areas should be evaluated for cleanup. **The applicant would be responsible for the costs of testing and replacing PCB-containing transformers.***
- 4.12-5(b) *The applicant should request information from PG&E on the calculated strengths of the electric and magnetic fields generated by the Weber-Herdlyn and Rio Oso-Tesla lines, and the proposed Rancho Seco-Tesla line. Field strengths should be identified at the edges of the existing rights-of-way and at 50, 100 and 200 feet from the edges of the rights-of-way. Field strengths should be*

calculated for a range of loading conditions including average load and maximum anticipated load.

- 4.12-5(c) *Land adjacent to transmission line easements should be planned for recreational use or open space, to the maximum extent possible. The applicant should continue to evaluate the field strength information for the existing and proposed transmission lines in light of new research findings to identify whether setback distances for structures intended for human occupancy would be appropriate.*
- 4.12-5(d) *The proposed high school and elementary school south of Grant Line Road and adjacent to existing and proposed electrical transmission line easements should be relocated. This relocation should be identified in the Specific Plan.*
- 4.12-5(e) *The applicant should develop public informational material on the potential health problems caused by exposure to EMF from all sources, including overhead transmission lines. The public informational packet should include information about field strengths that could be experienced adjacent to the transmission line easements as developed in Mitigation Measure 4.12-5(b). The public informational packet should be provided to residents or occupants of structures located adjacent to the existing or proposed transmission line easements.*
- ~~4.12-5(f) *Signs should be provided at the edge of the rights-of-way of the transmission lines informing the public of the presence of high voltage transmission lines and the risks to persons with cardiac pacemakers.*~~
- 4.12-5(f) *Any metal structures or objects located near transmission line easements should be grounded to avoid nuisance induction effects such as shocks (experienced upon initial contact).*

Impact

- 4.12-6 **Asbestos, if present in existing farm structures, could cause adverse health impacts to workers during renovation and/or demolition.**

Asbestos may be present in building materials in existing on-site structures. Demolition or renovation of structures that have asbestos-containing materials may adversely affect the health of workers through inhalation of airborne asbestos particles.

Mitigation Measure

- 4.12-6 *Structures that would be removed or renovated as part of the project should be screened or surveyed for the presence of asbestos-containing materials. If asbestos were present, renovation and/or demolition should be undertaken only by licensed asbestos abatement contractors trained in proper asbestos removal and disposal procedures.*

4.12 PUBLIC HEALTH AND SAFETY

Impact

- 4.12-7 Materials disposed of at the small household landfill on the site may have affected soil and groundwater quality.**

It is unknown whether hazardous materials were disposed of in the household landfill. If hazardous materials were present, they could leach into the underlying groundwater and possibly affect the groundwater resources.

Mitigation Measure

- 4.12-7 *The applicant should demonstrate that the disposed materials do not constitute a health or environmental hazard. Such demonstration could be achieved through removal of disposed material in conjunction with soil sampling and groundwater sampling.*

Impact

- 4.12-8 The project could result in increased use, storage, and disposal of hazardous materials.**

The proposed project would include the addition of commercial and industrial businesses that would increase the volume of hazardous materials transported, stored, and used on-site. Numerous local, State, and Federal statutes and regulations pertain to the proper transport, use, storage, and disposal of hazardous materials and wastes. Each business would have specific permit and reporting requirements pertaining to the unique use, storage, handling, and disposal activities associated with that business. These requirements would be in place during operation of the proposed project.

Mitigation Measure

- 4.12-8 *No mitigation measure would be required if applicable statutes and regulations were followed by businesses associated with the project.*

Impact

- 4.12-9 Failure or overtopping of the levees along Old River and canals at the northern boundary of the project site could result in flooding, posing risks to human health and safety and property.**

Flooding potential in the northern portion of the project site is discussed in section 4.7 of this DEIR. The impacts of flooding are addressed in Impact 4.7-1. The recommended mitigation of the flooding impact, presented in Mitigation Measures 4.7-1(a) and 4.7-1(b), is to improve the levee protection and remove the area from the flood zone. After levee improvements are made, the potential flooding would be reduced but not completely removed. Failure or overtopping of the improved levee could occur under extreme or unforeseen circumstances.

Mitigation Measure

- 4.12-9** The applicant should prepare an Emergency Response Plan for the project which includes procedures for response to flooding events. The plan should present an emergency communication system, identify emergency coordinators, and establish evacuation procedures. The Emergency Response Plan should be reviewed and approved by the San Joaquin County Office of Emergency Services prior to approval of the Specific Plan.

Impact

- 4.12-10** Open water bodies within the project site could provide active breeding sites for mosquitos, potentially causing an environmental nuisance condition and disease transmission.

The project site is located on the margin of the Sacramento-San Joaquin Delta, a region of extensive waterways. Within the region, many potential sites for active breeding of mosquitos are available. The project site, through the creation of detention basins and maintenance of wetland areas could contribute to the proliferation of pests and transient vector mosquito breeding sites. The mosquitoes could present a nuisance condition or health hazard if not properly controlled.

Mitigation Measure

- 4.12-10** The applicant should prepare and submit a mosquito abatement program as part of the Specific Plan. The program should identify expected and potential areas conducive to active breeding of mosquitoes. The program should present specific mosquito abatement techniques which would minimize potential degradation of water quality. The program should be submitted to the San Joaquin County Mosquito Abatement District for review and approval. The applicant should be responsible for implementation of the program.

Impact

- 4.12-11** The development of the project may increase the potential for public exposure to explosives, fire, or the release of materials during railway accidents on the railway line crossing the northern portion of the project site.

The proposed project would include residential, commercial, and industrial land uses adjacent to the Southern Pacific Transportation Company's railroad track traversing the northern portion of the site, parallel to Byron Highway. The tracks currently carry fewer than ten freight trains per day and the travel speed is about 40 miles per hour. The frequency and speed of the trains may be increased in the future (see p. 4.14-14). The trains may transport hazardous materials, which in the event of an accident, could cause an explosion, fire, or release of hazardous materials. There

would be a relatively greater potential for accidents to occur at the at-grade railroad crossings with the increase in vehicle traffic that would accompany project development. Any of these incidents could cause injury to people and damage to buildings in the area of the tracks. It is possible that in the event of a release of hazardous gas, vapor, or liquids, air or water quality over a large area could be affected. This impact cannot be fully mitigated to a level of insignificance.

Mitigation Measures

- 4.12-11 Businesses and public institutions located adjacent to the established buffer zone should maintain emergency contingency and evacuation plans for the event of a catastrophic accident.

4.13 BIOLOGICAL RESOURCES

SETTING

The project site has historically supported native plant communities ranging from lush riparian woodlands along Old River and Mountain House Creek to annual grassland and oak savannah in the western upland portion of the site. This site, in conjunction with areas to the north and south, formed the major transition zone from permanent wetlands to upland drylands, and most likely supported one of the most varied and complex floras and faunas in the entire region.

The introduction of stock grazing to the area in the 1800s, followed by the introduction of irrigation and year-round farming in the 1900s, changed the plant and animal communities. Today, approximately 92 percent (4,270 acres) of the project site supports agricultural crops and pasture, and a major portion of the remaining seven percent has been invaded by introduced plant species to the extent that they now comprise nearly the entire non-irrigated grassland component. This rapid conversion from native to non-native (agricultural) plant communities has been accompanied by the loss of many wildlife species. However, the agricultural conversion has not been detrimental to all species. A select group of agriculturally-compatible species continue to persist, if not flourish, in this area of San Joaquin County. Among these agriculturally-compatible species are several sensitive and/or fully protected species for which the project site provides critical habitat.

Vegetation

The project site includes a diversity of plant species observed during the spring of 1991 (Table 10.16-1 in Appendix 10.16). These species are found in the following plant communities that are discussed below: irrigated cropland; riparian community; freshwater marsh community; alkali sink community; and valley grassland community.

Irrigated Cropland

Agricultural crops constitute the major vegetation type on the project site (Figure 4.13-1 and Table 4.13-1). The most dominant and constant of these crops is alfalfa. In 1988, alfalfa comprised 26 percent of the irrigated land; in June 1991 during the field survey for this study, alfalfa remained essentially constant at 27 percent (Mullen, 1991). The distribution of alfalfa fields on the project site is of importance to the distribution of wildlife populations. In the portion of the site between Old River and Byron Road, alfalfa currently occupies about 42 percent of the land surface (Figure 4.13-1). South of Byron Road, alfalfa occupies about 18 percent of the project site.

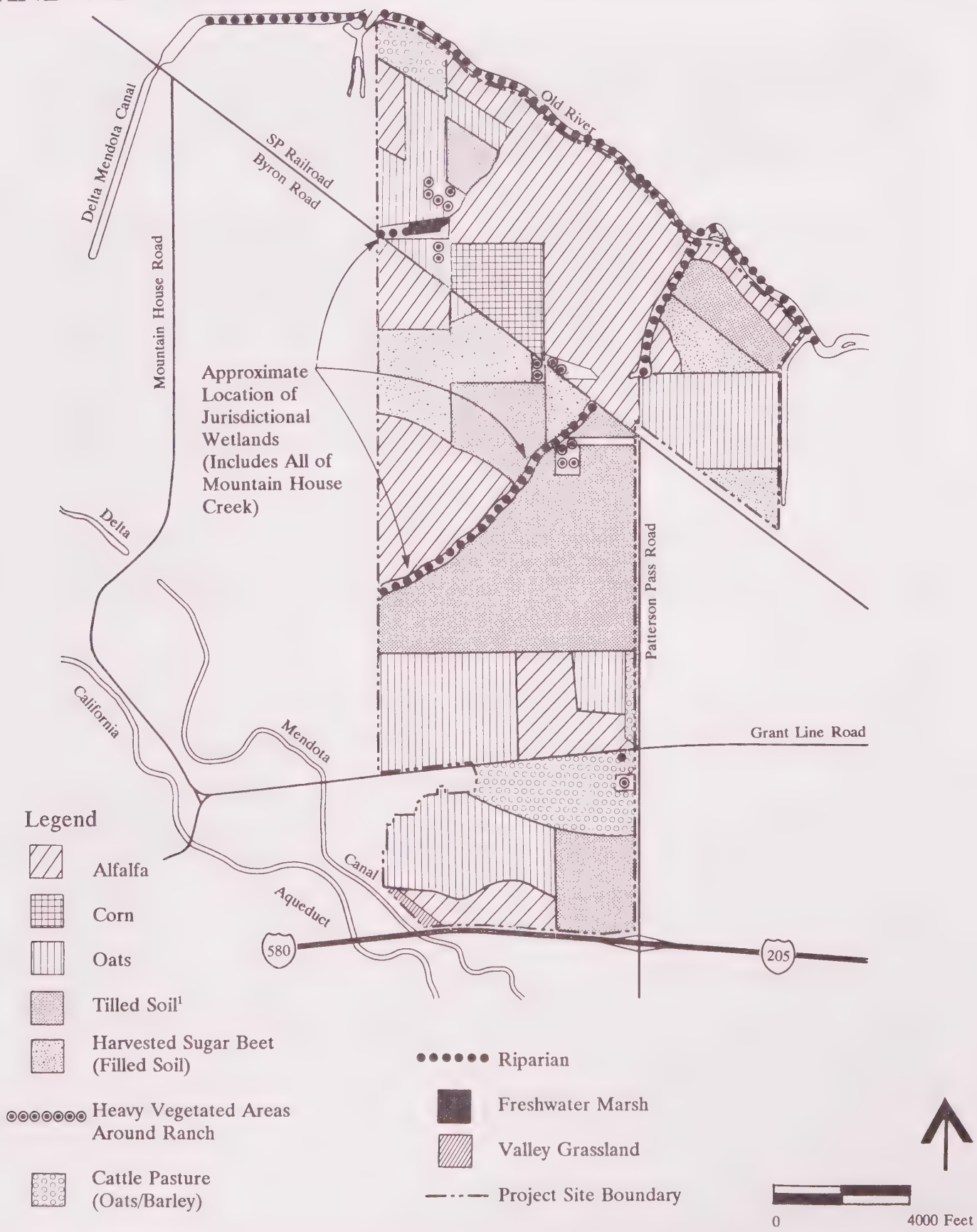
TABLE 4.13-1
ON-SITE CROP ACREAGE¹

Crop	Acreage	Percent of Total Acres
Alfalfa	1,153	27
Oats	982	23
Pasture	214	5
Sugar beets	85	2
Open/fallow	1,836	43
Total	4,270	100

¹ Acreage as of 1 June 1991.

ON-SITE CROPS, JUNE 1991 AND WETLANDS

Figure 4.13-1



Other crops planted at the project site over the past several years include sugar beets, oats, barley, wheat, blackeyed peas, silage corn, and irrigated pasture. With the exception of irrigated pasture, alfalfa is the only long-term crop remaining in production for four to five years after planting. Sugar beets take approximately one year to mature, but all other on-site crops are normally part of a two-crop seasonal rotation plan in which the ground is heavily cultivated with ripping shanks, disc, and harrow before each spring and fall planting. The significance of the long-term nature of the alfalfa crop to wildlife is discussed below.

Riparian Area

A willow-dominated riparian plant association occurs in the narrow band along the northeast side of the Old River levee (Figures 4.13-2 and 4.13-3a). Willow (*Salix goodingii*) is interspersed with blackberry (*Rubus procerus*), wild rose (*Rosa* sp.), and an occasional white alder (*Alnus rhombifolia*). Willow also occurs in a pure stand along a portion of the edge of the small marsh complex just west of the intersection of the western site border and Kelso Road (Figure 4.13-3b). Both the Old River and marsh edge stands contain mature trees or many of the native riparian species, such as wild grape, which characterize an undisturbed valley riparian community.

Freshwater Marsh Community

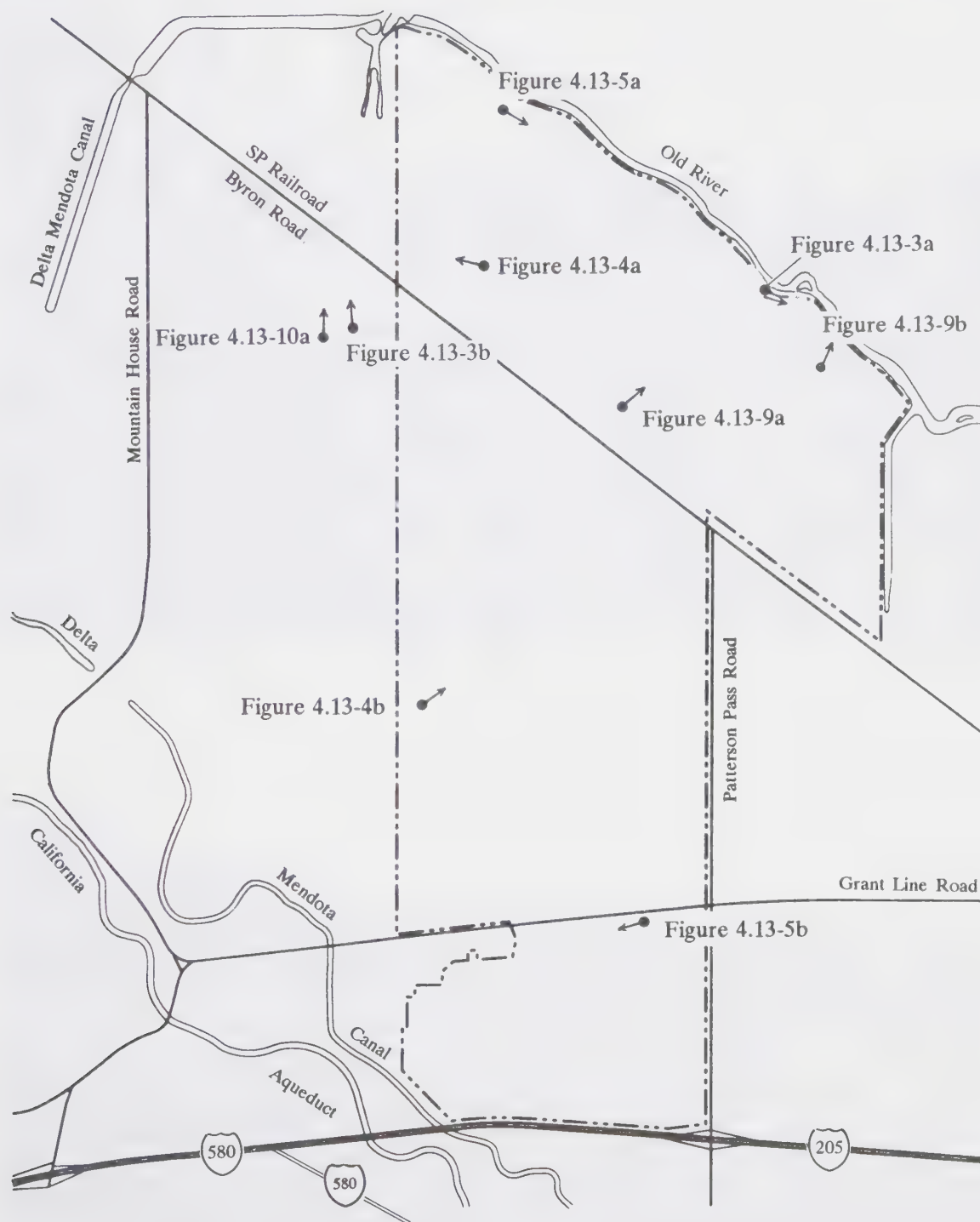
A 3.3-acre freshwater marsh community, dominated by broad-leaf cattail (*Typha latifolia*), is located in the northwest portion of the site just north of Byron Road (Figure 4.13-4a). Small segments of another marsh community, totaling 5.1 acres, also occur along portions of Mountain House Creek where control measures such as burning, grazing, and herbicides have not denuded the banks (Figure 4.13-4b). Assorted sedges (*Carex* sp.), brass buttons (*Cotula coronopifolia*), and Bermuda grass (*Cynodon dactylon*) are also abundant in these areas. Along most ditch and slough shores where small strips of the freshwater marsh community would normally establish, one or more of the above-mentioned control measures have been employed (Figure 4.13-5a). The on-site marsh communities have been defined as jurisdictional wetlands according to the procedures set forth by the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, January 1989 (U.S. Army Corps of Engineers, 1989). **Because a Corps permit may be required, the Corps recommends that the applicant consult with the agency early in the planning process. A wetlands delineation map is required when jurisdictional wetlands are involved. The applicant's wetlands delineation map was verified to be correct during the site surveys for this study.**

Alkali Sink Community

The alkali sink plant community has a special wildlife significance; it was originally the major habitat for the endangered San Joaquin kit fox in the northern Central Valley (Morrell, 1972). The community, characterized by salt-tolerant plant species, is no longer common in the Central Valley. A remnant of what was most likely a far more extensive alkali sink plant community persists in the northwest corner of the site, where the land has not been regularly farmed and irrigated (Figure 4.13-6). Indicator species for this association include seepweed (*Suaeda torreyana*) and iodine bush (*Allenrolfea occidentalis*).

Valley Grassland Community

Small segments of a highly-modified valley grassland community are located in the southwest corner of the project site where the land has not been leveled for irrigation. This community continues westward across



Legend

● → Photo Location
(see Figure 4.13-3, 4, and 5)

--- Project Site Boundary



BASELINE

PHOTOGRAPHS OF BIOTIC RESOURCES

Figure 4.13-3



a) A view of the riparian zone along Old River at the eastern edge of the project site.



b) A small cattail and willow marsh near Kelso Road just south of Byron Road and off the project site.



a) The 3.3-acre cattail marsh adjacent to Kelso Road and north of Byron Road, within the project site.



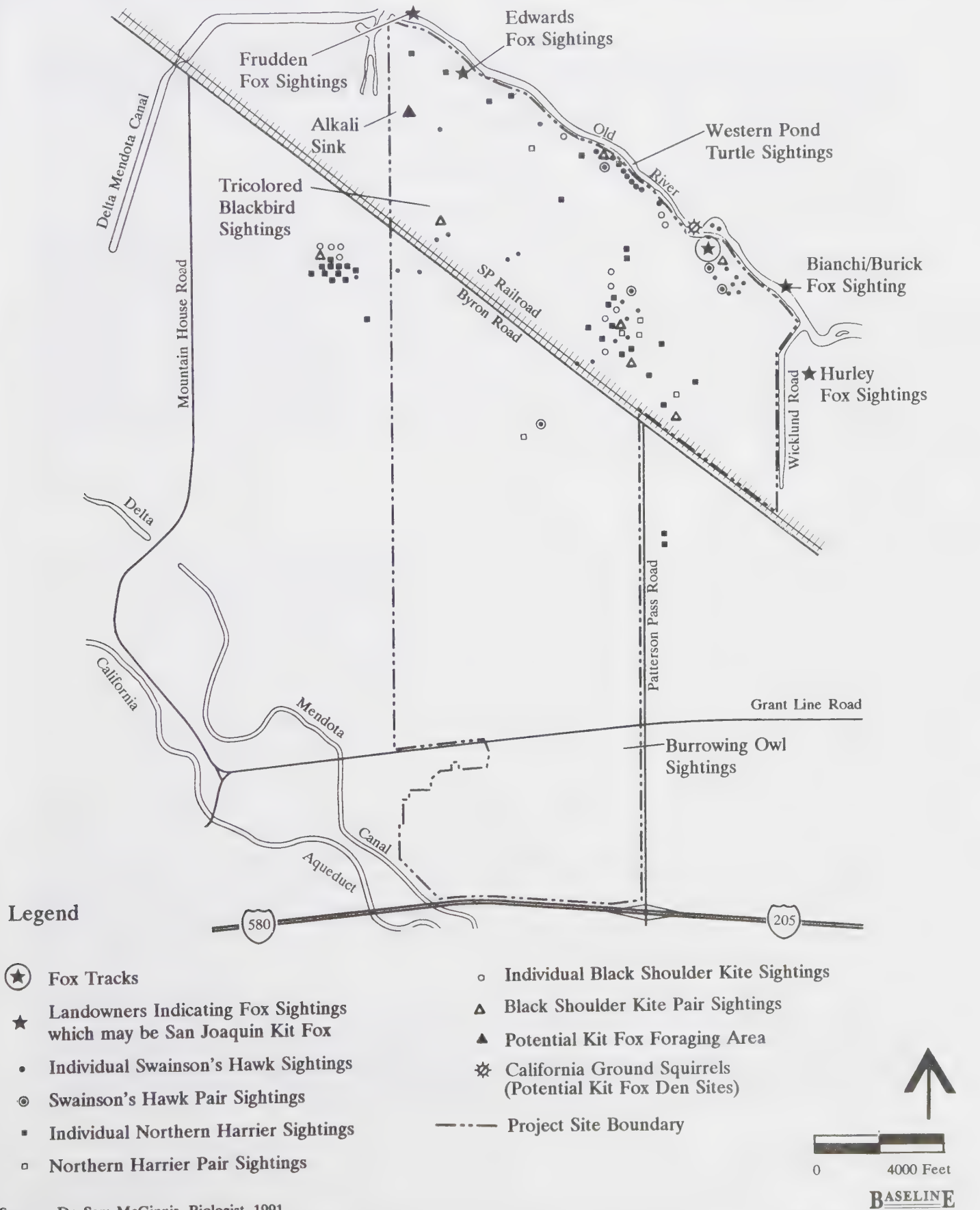
b) A segment of upper Mountain House Creek where a lush, low vegetative cover has persisted along the bank area.



a) An irrigation channel north of Byron Road where bank vegetation removal has occurred.



b) A segment of the upland, non-irrigated grassland community near the western border of the site.



Source: Dr. Sam McGinnis, Biologist, 1991.

the Altamont Hills (Figure 4.13-5b). Originally composed of native bunch grasses, these areas have been almost entirely replaced by introduced grasses and pioneer weed species, and are usually heavily grazed each spring and summer. Grazing has occurred to the extent that patches of bare soil are frequent by the time the winter rainy season begins, resulting in significant soil erosion.

Endangered, Threatened, Candidate and Species of Concern¹

Four special-status terrestrial plant species have geographic ranges that include or border the project site. These are: the State- and Federal-listed endangered, large-flowered fiddleneck (*Amsinckia grandiflora*); and the three Federal candidate 2 species, the Diablo helianthella (*Helianthella castenea*), diamond petaled California poppy (*Eschscholtzia rhombipetala*), and caper fruited tropidocarpum (*Tropidocarpum capparideum*). These species are all upland plants which originally were abundant in the active annual grassland habitats of eastern Alameda and Contra Costa counties. None of these plants was located during the late spring plant survey in 1991, and because of the near total conversion of the former grassland areas to cropland, it is doubtful that any specimens persist on the site. One aquatic protected plant, the State-listed threatened, Federal candidate 2 mudflat lilaeopsis (*Lilaeopsis masonii*) occurs on the pilings and hard mud banks in Old River in the northwest corner of the site.

Wildlife

The project site was surveyed visually for wildlife during daylight hours at weekly intervals from 15 January through 15 April 1991. From this latter date through 12 June 1991, the site was visited at least twice weekly, usually during the first few hours after dawn and the last two hours before dark. Portions of the site were also visually surveyed with the aid of a high-power, halogen spotlight during rainy evenings in March and later during a San Joaquin kit fox night survey in late May and early June 1991. A final follow-up kit fox survey was conducted in the area of the Old River levee during mid-July 1991.

A wide variety of wildlife species was observed directly or indirectly (vocalization, tracks, scat, or shed skin) between 15 January and 25 July 1991 (Table 10.16-2 in Appendix 10.16). This observation time span allowed for the documentation of both wintering migrant bird species and birds that only stop to rest and feed in this area on their way from southern wintering sites to northern nesting areas. Of special interest is the relatively large number of water bird species using the project site. Common species of water fowl such as ducks, grebes, and cormorants would normally be expected given the frontage on Old River and the widened mouth portion of Mountain House Creek. However, fallow or recently harvested cropland also provides feeding opportunities for a large number of shorebirds and herons, especially after heavy rains or irrigation. Available food items range from soil invertebrates, such as earthworms and sowbugs, to small rodents forced out of their burrow systems by flood conditions.

¹Endangered: Seriously in danger of becoming extinct. Threatened: Likely to become endangered in the foreseeable future in the absence of protection action(s). Candidate 2: A species or subspecies for which there is biological information that indicates that proposing to list the taxa as threatened or endangered is possibly appropriate, but for which substantial data on biological vulnerability and threats are not currently known or on file to support the immediate listing. State Species of Concern; Priority 2: A species of California plant or animal that is definitely in decline.

The abundance of rodent prey in the cropland areas, and particularly in alfalfa fields, is responsible for the large number of raptor species and individuals of each raptor species at the project site. Leading this list are the red-tailed hawk (*Buteo jamaicensis*) and barn owl (*Tyto alba*). Joining these and other resident species in winter are the migratory rough-legged and ferruginous hawks and in summer the Swainson's hawks (*Buteo swainsoni*). The latter species is discussed below in more detail.

The site constitutes a sound prey base for mammalian, reptilian, and avian predator species because the longer-term crops, alfalfa, sugar beets and irrigated pasture, provide good habitat for rodents such as the California meadow vole (*Microtus californicus*), Botta pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), and house mouse (*Mus musculus*). The Virginia opossum (*Didelphis marsupialis*), raccoon (*Procyon lotor*), feral cat (*Felis domesticus*), and coyote (*Canis latrans*) were among the most numerous mammalian carnivores observed during the winter/spring survey. Several sightings of the long-tailed weasel (*Mustela frenata*) also occurred. This weasel is one of the smallest mammalian predators in this area and one that is seldom seen. Two reptilian predators, the Pacific gopher snake (*Pituophis melanoleucus catenifer*) and the California king snake (*Lampropeltus getulus californiae*), were also observed on many occasions. Prime agricultural lands, such as those found at the project site, provides a natural habitat for large numbers of gopher snakes which provide rodent control.

The confinement of Old River by man-made levee banks has eliminated the many backwater pools and marshes that once characterized the Central Valley river system in which amphibian species flourished. This confinement has almost eliminated the inshore, or littoral, zone. Thus, the mouth of Mountain House Creek, which was undoubtedly once flanked by an extensive marsh area, now has near vertical banks and harbors little amphibian life. The Pacific tree frog (*Hyla regilla*) still maintains a large breeding population in the northwest marsh area (Figure 4.13-4a), and the introduced bullfrog (*Rana catesbeiana*) appears to be breeding in a few permanent sump areas where irrigation wastewater is held before being pumped back into the river. Several bullfrogs (*Rana catesbeiana*) were also observed in small pool areas on Mountain House Creek where their presence may be directly related to the absence of the native red-legged frog (*Rana aurora aurora*) on the project site. The latter frog, a State-listed species of special concern, was observed outside the northwestern border of the site where, apparently, bullfrogs and/or irrigation runoff have not affected it.

The loss of shallow, inshore, and slough habitat, limiting amphibian abundance at the site, has also reduced the number of native freshwater fish species in the area. Many of the native Central Valley fish species require shallow, well-vegetated, inshore zone habitat to survive. The loss of this resource throughout most of the San Joaquin Delta system has led to the extinction of minnow species, such as the thick-tailed chub (*Gila crassicauda*); the shore of Old River bordering the project site appears to be an exception. Starting in late spring, a thick growth of the vascular water plant, Elodea (*Elodea occidentalis*), developed and by mid-July 1991 a stand, approximately 20 to 30 feet wide, occupied the entire southern bank extending along the project bank. Four hauls with a 30 by 4 foot $\frac{1}{8}$ inch mesh seine net produced 37 fingerling striped bass (*Morone saxatilis*), 11 fingerling largemouth bass (*Micropterus salmoides*), 13 redear sunfish, ranging from 1 to approximately 3 years of age, 7 fingerling black crappie (*Poxomis nigromaculatus*), 2 immature Sacramento

squawfish (*Pychocheilus grandis*), and three species of small introduced prey fishes so numerous that they were not counted [threadfin shad (*Dorosoma petense*), inland silverside (*Menidia beryllina*), and the mosquitofish (*Gambusia affinis*)]. Considering that these four hauls each sampled only about 200 square feet of Old River shoreline, the numbers of young game fish and small adult prey fish in the vegetated littoral zone appear to be very high during the late spring period. This prediction is supported by the relatively large numbers of small fishes which could be viewed near the surface on calm days in late spring when the sun was at the observer's back in the western sky. This portion of the project site also provided a quiet foraging zone for mallards (*Anas platyrhynchos*), kingfishers (*Ceryle alcyon*) and muskrats (*Ondatra zibethicus*).

Endangered, Threatened, Candidate, and State Species of Concern

San Joaquin Kit Fox (*Vulpes macrotis mutica*) — State-Listed Threatened; Federal-Listed Endangered. The San Joaquin kit fox (the kit fox) historically inhabited most of the alkali sink plant community of the San Joaquin Valley and adjacent valley systems (Morrell, 1972, 1975). The kit fox also occupied the lower reaches of many of the surrounding foothill grassland areas. However, intensive agriculture, livestock grazing, and ground squirrel eradication via poisoning, have greatly reduced the available usable habitat for this candidate species during the past half century.

The project site is situated on the northern edge of the geographic range of the kit fox (U.S. Fish and Wildlife Service, 1990). The kit fox survey was conducted between 15 May and 2 June 1991, the time period when young foxes are leaving the company of their parents and dispersing, thus creating an annual "kit fox population high" in areas where it breeds. Not only is this an optimal time to observe kit foxes, but it is also the best time of year to locate natal dens² since their thresholds are usually still littered with the bones and tail fragments of rodent prey. Three principal techniques using current accepted procedures as outlined by California Department of Fish and Game to determine kit fox presence were used during the spring survey period. These included den searches, track stations (i.e., scent stations), and spotlight surveys. A brief description of each survey technique as applied to the project site follows.

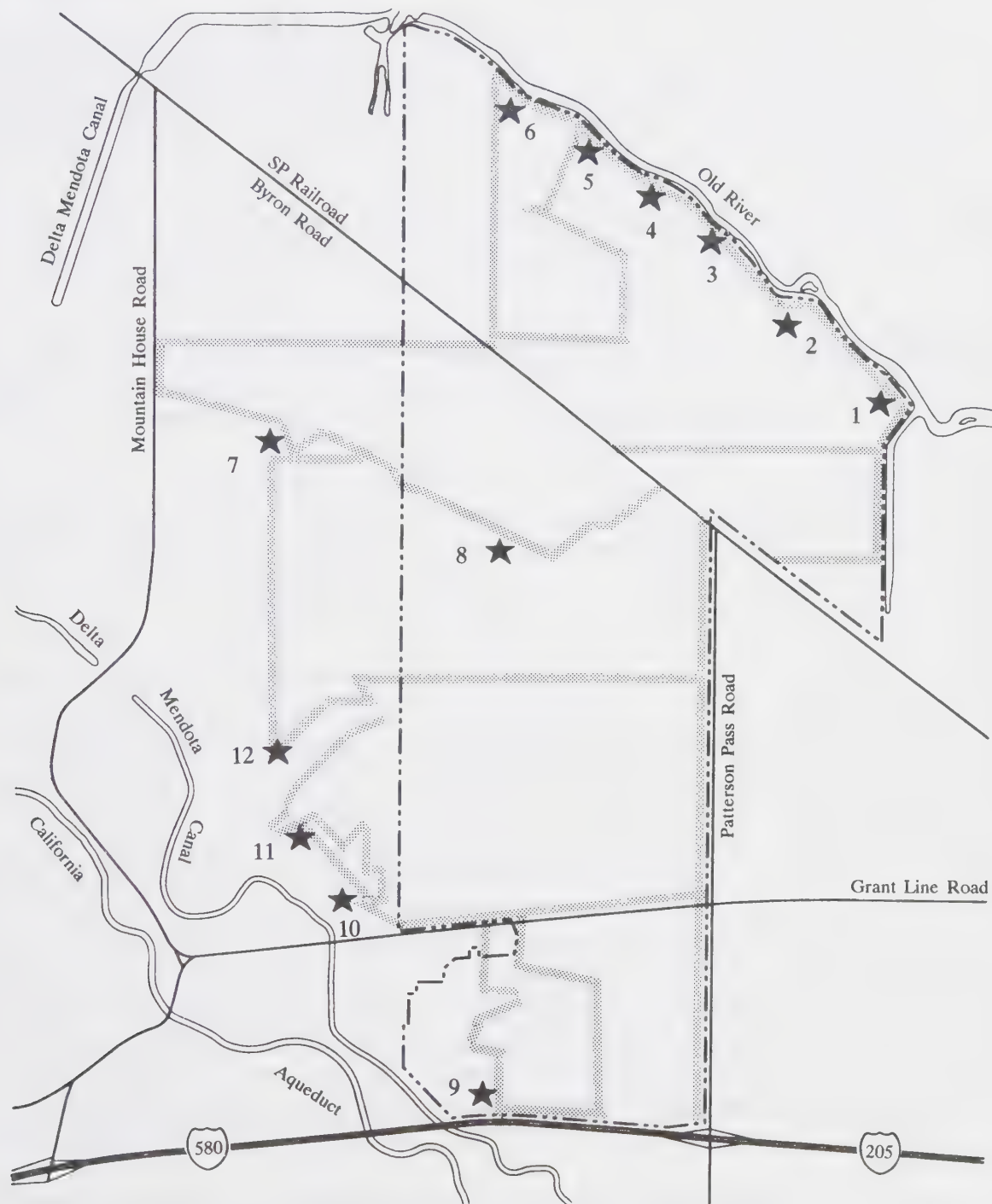
The project site and adjacent areas were visually surveyed for ground squirrel burrow systems by driving ranch and County roads (Figure 4.13-7) and inspecting fence row and creek bank areas with binoculars.³ Any area that appeared to contain burrow systems was surveyed on foot to determine if California ground squirrel burrows were present and, if so, if any entrance was larger than ten cm (four inches) in diameter, minimal size for the kit fox. In addition to the search for potential kit fox dens, all scat within the possible size range for fox species (5.0 to 7.5 cm) was collected for later laboratory analysis using tooth and guard hair identification techniques. **Analysis of the scat revealed it to be of a fox-type carnivore containing mice jaws and skull fragments.** The possible presence of coyote scat was also evaluated in the greater ground squirrel burrow areas. Such information is often useful in determining spatial use patterns for foxes and coyotes in an area.

²Natal dens: dens in which kit fox pups are fed and reared.

³10 x 50 binoculars, that have a magnification of ten times the naked eye, were used during the survey.

KIT FOX TRACK STATIONS
AND SURVEY ROUTES

Figure 4.13-7



Legend

- ★ Track Stations for San Joaquin Kit Fox
- Night Driving Routes
- - - - Project Site Boundary



BASELINE

Burrows of the California ground squirrel occur sporadically at the project site and are confined mainly to barren portions of the Old River levee system and the low irrigation levees in the adjacent alfalfa fields. Squirrel numbers were very high in the latter area, especially after the spring crop of young were weaned and foraging on their own. Smaller burrow systems also occur near the southwest corner of the site in the grazed, unirrigated grassland area. The only potential kit fox den sites found during the survey were on the upper Mountain House bank levee and on the western side of the Old River levee just north of the project site border (Figure 4.13-6). Scat, approximately the size of that produced by a small fox, was recovered near these sites.

Twelve track station sites for kit foxes were placed throughout the project area (Figure 4.13-7) on 15 May and remained through 2 June 1991, a total of 18 days. The track station technique used in this survey was patterned after that described by Berrett (1983). This system employs square meter sheets of aluminum backed with plywood over which a thick film of smoke soot is applied.

The track stations were checked at approximately two-day intervals at which time the beef-liver cat food bait was usually replaced. At each visit, all new tracks were identified and then circled with an inscribed line to prevent double track counts. The boards at heavily patronized stations were replaced by re-smoked units whenever the track accumulation approached a confusing or unreadable state.

Tracks of domestic dogs and cats dominated the track station survey. Other tracks included those of coyote, ground squirrel, opossum, striped skunk, and long-tailed weasel. One set of fox prints was recovered from the track board at Station 2 (Figure 4.13-7). When compared to sketches of the red, gray, and kit fox in an animal track field guide (Murie, 1974), the prints appeared to be between the gray and kit fox in character. Although the Murie guide is perhaps the best animal track guide currently available, it was written before the improved track collection technique of Berrett (1983) was in use. The track impressions made on a smoked metal plate are extremely sharp and void of the fuzzy edges as compared to those in natural mediums, such as snow, dust, and sand (Murie, 1983). To obtain more conclusive identification of the track, the track was "lifted" from the smoked plate using clear, wide packaging tape which was then pressed on white paper (Berrett, 1983). Two outside biologists (Getz, Myers, 1991) were consulted for their opinion on the track identification. Both biologists have recently completed extensive San Joaquin kit fox surveys and tracking studies which have yielded a number of sightings, tracks, and natal dens. A by-product of these studies is a collection of smoked plate tracks of both kit and red fox. After an extensive comparison with all recorded tracks, both biologists concluded that the Mountain House track looks more like a kit fox than any other species of canine.

Additional confirmation of this conclusion came unexpectedly during the last week of November 1991 when kit fox tracks were obtained on smoked plates in the vicinity of the project site. This was accomplished by employing the flash camera-wire trip method developed by the Forestry Sciences Laboratory, Olympia, Washington, which took two color photos of a kit fox in the process of "making tracks" while attempting to eat the track board bait. Comparison of the Mountain House track with these tracks provides further

confirmation that a kit fox visited track board No. 2 on the night of 21 May 1991. Consultation with Department of Fish and Game, U.S. Fish and Wildlife Service, and County staff representatives concluded that the print was probably a kit fox and additional surveys should be conducted to verify this species' presence on the site.

Night spotlighting surveys were conducted for six nights in the later part of the May study period. Surveys were made from a 1973 Ford pickup truck equipped with a Coleman Model 5362-178 Halogen 750,000 candlepower "Night Sight" spotlight. A person operated the spotlight on the right side of the truck cab while the driver viewed the road pathway with the aid of the high beam headlights. A second Coleman spotlight was available in the truck cab in the event the driver should need to verify any fox sighting made by the observer. Unfortunately, the opportunity never arose. Because of the narrow and rutty nature of most of the levee and ranch roads, the driver did not employ the second light while driving.

Most of the routes followed ranch roads (Figure 4.13-7), as opposed to main roads, to prevent disturbance from other vehicles during the search effort. Surveys began approximately one-half hour after sundown (about 8:30 PM daylight time) and terminated at or near 11 PM. All mammals sighted were closely inspected with binoculars for positive identification, and the position of each was then recorded on a large-scale map.

The night spotlight survey results paralleled closely the track board findings in terms of mammals observed, with the exception that no foxes of any species were observed. Rabbits and large numbers of the black-tailed hare and Audubon's cottontail were also observed. The rabbit prey source has been generally overlooked in the literature that discusses the food habits of the kit fox in its northern range (Weslar, 1987). Most literature sources point to the California ground squirrel as the primary prey item for the kit fox in this area. However, none of these sources addresses the problem that the ground squirrel is highly diurnal, while the kit fox is believed to be nocturnal. Thus, a lush rabbit prey source may be more important than a similarly large ground squirrel population in evaluating potential kit fox habitat.

A questionnaire was mailed to all residents who live within and adjacent to the project site, because the people who actually live on a given portion of the project site are more likely to observe animals than biologists during a limited survey period. Most of the questions pertained to agricultural crops, but two questions were: "Do you see any fox and/or coyote on your property?" and "How often for each?" Those persons reporting one or more sightings of fox were then contacted by telephone and asked to describe the fox they observed. If their descriptions of the observed foxes fit that of the kit fox, follow-up visits with the observers were conducted and pictures of this species were shown to each person.

Seven of the 14 landowners who returned their questionnaires reported seeing foxes on or near their property. Follow-up telephone and/or personal interviews revealed four sightings which had a high probability of being those of the kit fox. Two of the reports were from residents who live just off the project site adjacent to its southeast corner (Hurley, Bianchi, Burick, 1991). The other two were from persons who own summer homes along Old River just west of the northwest corner of the site (Edwards and Frudden, 1991). Both of these

latter sightings were made during the last week of June 1991 (Figure 4.13-6). Frudden observed a small fox with exceptionally big ears and a buff-colored coat. The fox was seen on the Old River levee, and observed from the window of her summer home on an island in the Old River channel. The observation was compared with a photograph of a kit fox shortly after the sighting and a follow-up visit confirmed that the sighting conformed to the photo (Frudden, 1991).

A summary map of kit fox observations and survey sites for the area north of I-580 (Alameda and Contra Costa counties) has recently been prepared (Huffman and Associates, Inc., 1991) (Figure 4.13-8). The survey reports five sightings, three of them within the past year, between Marsh Creek Road and the rugged upland area north of I-580, west of the project site near Vasco Road. South and east of these sitings, intense irrigated farming and/or spreading suburban development appears to have deterred kit fox use. North of this area, overgrazing and ground squirrel eradication have created an equally unsuitable habitat. The swath in which the kit fox sightings have been documented is characterized by scattered stands of both ungrazed grassland and lightly disturbed riparian systems, and is presumably sufficient to allow minimal fox presence to continue.

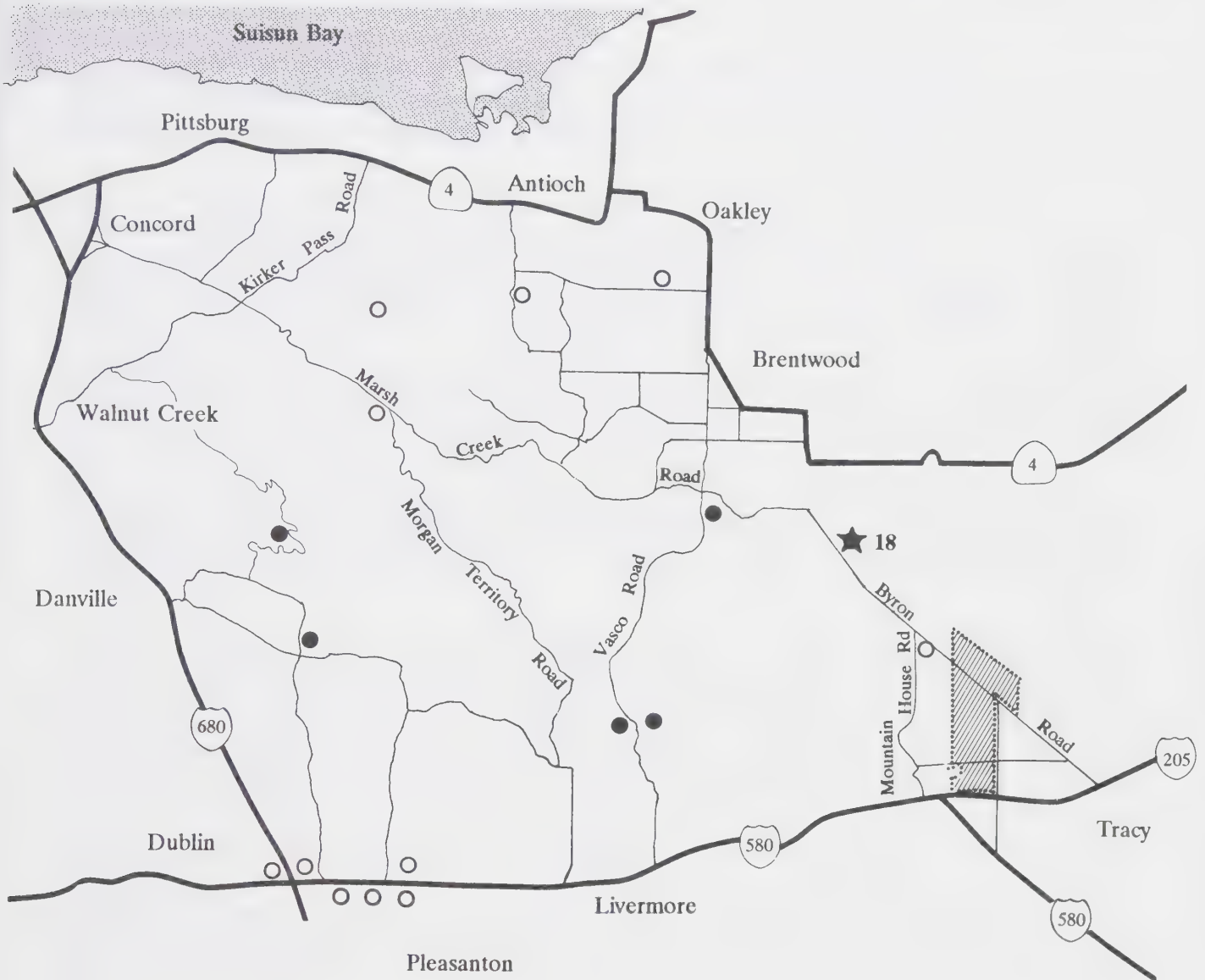
This type of habitat also occurs along the Old River levee on the project site. Of special interest is that the #18 sighting on the Huffman & Associates map (Figure 4.13-8) and the Frudden and Edwards sightings (Figure 4.13-6) both occurred in late June of 1991, at a time when the juvenile foxes should be dispersing from the parental territorial area. The failure in sighting kit fox during the spotlight survey may be attributed to the fact that the normal spring season, when bird nesting and wildflower blooming occur, seemed to have been postponed by several weeks due to weather conditions.

The efficiency of the present night spotlight survey technique as currently dictated by the 1990 California Department of Fish and Game (DFG) guidelines for kit fox surveys may be questionable. Most of the residents' sightings, plus the ones northwest of the site, were daylight observations. The Marsh Creek Road sighting was of a kit fox with a California ground squirrel in its mouth (Huffman, 1991 and Mullen, 1991) (Figure 4.13-8). This sighting was located approximately 10 miles from the site of track board number two on the project site (Figure 4.13-7). This again raises the point concerning the assumed primary prey (i.e., California ground squirrel) of the kit fox in this area, and the question as to how this nocturnal predator captures this deep burrowing, diurnal prey species at night.

The conclusion from the site survey, the comparison of kit fox track prints, and consultation with State and Federal wildlife agencies is that at least one San Joaquin kit fox used the Old River levee area both on and adjacent to the east and west borders of the site during late May and June 1991, presumably as a corridor. This conclusion is based on several factors: 1) the track appeared during the middle of the survey period and in a logical corridor area, the confluence of Mountain House Creek and Old River; and 2) there were no sightings of kit foxes nor were other prints obtained during the nighttime survey period. If the site were used for breeding, pupping, feeding, and/or weaning purposes, the evidence should have been substantiated during the survey period. The habitat appears to function both as a movement corridor and feeding site. The latter

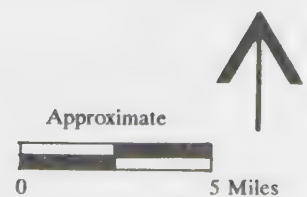
SAN JOAQUIN KIT FOX SIGHTINGS AND SURVEYS

Figure 4.13-8



Legend

- Sightings
- ★18 Specific Sighting Referred to in Text
- Surveys Complete (no sightings)
- ▨ Project Site (see Figure 4.13-6 for on-site sighting information)



assumption is supported by the presence of several colonies of California ground squirrel along the levee system and a large Audubon cottontail rabbit population in this area, as well as the abundance of secondary food in the form of large meadow mice and pocket gopher populations, which thrive in the alfalfa fields adjacent to the levee.

Furthermore, recent tracking studies of the kit fox have found that this species will travel approximately 35 miles in a four-month period (Getz, 1991). The Marsh Creek sighting, mentioned above, made by Philip Wheeler, EIP Associates, was recorded in 1989. It therefore seems possible that, if a kit fox in this area wanders, it could have easily traveled ten miles in two years.

Swainson's Hawk (*Buteo swainsoni*) — State-Listed Threatened; No Federal Listing. The Swainson's hawk is a medium-sized buteo or soaring hawk, with long, pointed wings and a square tail. Unlike most hawks, it exhibits several color phases ranging from light through rufus (red/brown) to very dark plumage. The Swainson's hawk is unique among California raptors because it migrates to the Central Valley from South America in late March and early April to nest and raise its young. In late August and September, this species returns to Argentina and other neighboring countries for the fall and winter periods (U.S. Fish and Wildlife Service, 1986).

Many factors have been postulated as possible causes for the declining population of the Swainson's hawk in California, including: 1) agricultural crops which hinder the capture of prey (Bloom, 1980); 2) grazing pressure (Detrich, 1986); 3) predation on eggs and nestlings (U.S. Fish and Wildlife Service, 1986); 4) destruction by humans of the wintering grounds (Bloom, 1980); 5) pesticide use (Bloom, 1980; Detrich, 1986); 6) the loss of habitat through land use conversions (California Department of Fish and Game, 1990); and 7) direct competition with the more aggressive and abundant red-tailed hawk (*Buteo jamaicensis*) (Craighead and Craighead, 1956). Although the exact combination of factors responsible for its decline may never be known, Swainson's hawk numbers have dropped drastically during the past century in California. Historically, California's Swainson's hawk population may have exceeded 17,000 breeding pairs (Bloom, 1980). However, current population estimates average about 550 pairs for the entire state of California and 280 pairs for the Central Valley (California Department of Fish and Game, 1990).⁴

Between 18 April and 23 May 1991, the project site was surveyed 12 times for Swainson's hawk presence and activity. Surveys consisted of driving specific routes and stopping approximately every 200 yards to search the surrounding terrain with binoculars. Surveys usually lasted three hours and were conducted primarily in the mid-morning and late afternoon hours. The results of these surveys are discussed below.

A total of ~~43~~ **42** Swainson's hawks were observed during the survey ~~of which ten were in pairs.~~ **On five separate occasions, a foraging pair was observed** (Figure 4.13-6). Because the survey method entailed moving rapidly to observe adjacent areas once a Swainson's hawk was sighted, it is unlikely that any bird was

⁴The current habitat problems facing this raptor in California and the project site area are discussed in Appendix 10.16.

4.13 BIOLOGICAL RESOURCES

counted twice on any one day. The ~~largest positive~~ **highest** single-day **observation** count was eight, which occurred during high wind conditions when all of the individual Swainson's hawks were essentially lined up in aerial perch sites along the edge of the Old River levee.

Of the 33 sightings of individual hawks, 30 were made between Byron Road and Old River (Figure 4.13-6). Most of the sightings were made in and over alfalfa fields, and generally when swathing, bailing, or flood irrigation of alfalfa was occurring or had recently taken place (Figure 4.13-9a). The distribution of these sightings correlates with the presence of alfalfa on the project site (Figure 4.13-1), especially in the area immediately south of the Old River levee where large populations of 15 to 20 adult and immature California ground squirrels and Audubon cottontail rabbits also occur along the riparian zone of the levee and on the irrigation berms. These species, combined with the California meadow voles and Botta pocket gophers in alfalfa fields, present a scenario in which a Swainson's hawk can capture any one of four major prey items on each flyover.

Alfalfa fields support very large numbers of burrowing rodents which can withstand occasional flooding. Two such species are the California meadow vole and the Botta's pocket gopher. The meadow vole is in the group known as "microtine rodent" which exhibit a three to four year population cycle.

This fast reproducing mouse occurs in extremely high numbers in localized areas every three to four years, especially where high protein (16 percent) food, such as alfalfa, is available. During a "microtis high," avian and the more mobile mammalian and reptilian predators tend to congregate in such sites to use this temporary food abundance. If there are also other prey species such as ground squirrels, gophers, rabbits, etc., which occur along the Old River levee and on the alfalfa field berms of the project site, predators may remain long after the meadow mouse high has declined.

This appeared to be the case in the area between Byron Highway and Old River in spring 1991. Numerous burrows and runways of the meadow mouse could be seen along the levee and berm edges of the alfalfa fields. In addition to the Swainson's hawks, northern harriers, and black-shouldered kites were attracted by this prey, 67 individual sightings of the common red-tailed hawk were also recorded. Additionally, 24 barn owls were recorded during the six nights of spotlight survey for the kit fox on the site. Because of this high number of sightings, this information was not plotted on Figure 4.13-6.

It is unlikely that the high number of raptors recorded in spring 1991 will be observed during the same season in the next couple of years, since the meadow vole high will or has already "crashed" and must build up again. However, the mice and hawks will return again as long as the alfalfa fields remain.

At least one mated pair of Swainson's hawk consistently using the foraging areas on the site (Figure 4.13-6). One of these birds had the darkest plumage of any hawk observed in the survey, and the other had several distinctive light markings. They were always observed together and the smaller individual, presumably the male, was often seen on tree top and electrical pole perches on or near the small, privately-owned island just

PHOTOGRAPHS OF BIOTIC RESOURCES

Figure 4.13-9



a) A newly cut alfalfa field north of Byron Road where numerous Swainson's hawks were observed.



b) A small stand of tall trees on an island at the confluence of Mountain House Creek and Old River where Swainson's hawk roosting was observed.



The largest grove of tall trees in the study area directly west of the San Joaquin/Alameda County line where numerous raptor sightings were made.

off the project site, east of the mouth of Mountain House Creek (Figure 4.13-9b). It is common for raptors, particularly buteos, harriers, and kites, to forage as mated pairs throughout the mating portion of the nesting season.

Although the northeastern portion of the project site is an important foraging habitat for Swainson's hawk in the area, no nests were discovered during a thorough search of the relatively few large trees on the site. Two possible and suspected nest sites were the large tree groves on the small island at the Mountain House Creek/Old River confluence and the grove surrounding the farmstead north of Kelso Road about one-quarter mile west of the site boundary (Figure 4.13-10). One problem in nest site determination may have been the unusually late nesting period for most birds in Central California in 1991. The timing of the survey work on this particular year may have actually been too early, and Swainson's hawk pairs may have settled into nesting sites a week or two after conclusion of the survey period.

In summary, the Swainson's hawk survey revealed that the northeastern portion of the site is an extensively used Swainson's hawk foraging area. The value of this portion of the site is related to abundance of rodent and rabbit prey, which are periodically exposed to predation from ongoing agricultural practices. During the days or weeks when harvesting or irrigation is not taking place on a particular field, the constant presence of ground squirrels and rabbits in adjacent upland sites buffers the temporary cropland rodent unavailability, and may act to hold Swainson's hawks in these areas until the next harvest period. The lack of any substantial grove of large trees on the project site, and the absence of any nesting activity on the site through late May 1991, strongly suggests that the project site is not in itself a nesting area. However, given the average ten-mile foraging radius for Swainson's hawks in Central California and the fact that numerous large, riparian tree groves are located along the San Joaquin River system, east of the project site, it appears that nesting pairs and, ultimately, fledglings from these nest site areas, depend on the site for a portion of their prey requirements.

Northern Harrier (*Circus cyaneus*) — State Species of Concern, Priority 2; No Federal Listing. The most numerous raptor on and adjacent to the project site is the northern harrier (Figure 4.13-6). The former name of this bird was the "marsh hawk," which denotes its dependency on the marsh habitat for its survival. It is well adapted to capture rodents in dense, low vegetative cover through its habit of gliding low over an area and dropping quickly on exposed prey. The northern harrier is also unique among hawks because it nests on the ground instead of high in trees, and it is sexually distinct, with the male having a gray plumage and the female a brown coloration. On and near the project site, the northern harrier appears to be non-migratory.

The harrier's decline in past decades has been a direct result of marsh drainage and conversion to agricultural land, and hence its designation as a State species of concern (Remsen, 1978). Similar to the Swainson's hawk, the loss of the marsh feeding habitat of the northern harrier has been partially offset in the Central Valley by agricultural crops which support large rodent populations. Alfalfa fields are especially important to the northern harrier hawk because the windrows of alfalfa hay, which may remain in the field up to a week after

the monthly cutting, provide an excellent visual barrier over which a northern harrier can quickly glide, spot a rodent, and drop rapidly for the kill.

Forty-six sightings of the northern harrier were made, of which four separate pairs were consistently observed foraging over agricultural fields on the project site (Figure 4.13-6). Of the 46 total sightings, 30 were north of Byron Road (Figure 4.13-6). All sightings were concentrated around alfalfa fields. One pair usually returned to the small marsh area north of Kelso Road and west of the project site boundary (Figure 4.13-3b), where perhaps nest construction was underway. Because of its different hunting style, the northern harrier offers little competition to the Swainson's hawk and the excellent foraging habitat conditions present on the site can support more than one raptor species.

Black-shouldered Kite (*Elanus caerulea*) - California Fully Protected Species; No Federal Listing⁵. The black-shouldered kite displayed the most consistent presence on the project site of all the raptors. Single birds and/or pairs were observed at two or more separate locations during each of the 12 raptor survey visits. The fact that one pair nested in a small tree below the Old River levee partially accounts for this sustained presence. Another favorite roosting place for this species was in the farmstead tree grove west of the site and north of Kelso Road (Figure 4.13-10).

This raptor feeds on the California meadow vole. Because of its habit of hunting by hovering in places above areas of vole activity, its easily observable presence is usually a good indicator of this key prey species' abundance in an area. The black-shouldered kite's sustained use of the foraging area north of Byron Road (17 sightings) in contrast to those south of Byron Road (six sightings) clearly demonstrates the superiority of the northern area for raptor feeding (Figure 4.13-7).

Burrowing Owl (*Athene cunicularia*) — State Species of Concern, Priority 2; No Federal Listing. The burrowing owl has undergone a drastic decline in numbers throughout the State during the past half century (Remsen, 1978). Its scarcity in most areas appears directly linked to the eradication of California ground squirrel colonies. The burrowing owl-ground squirrel connection is a crucial one for this bird since it needs burrow systems in which to nest because it cannot dig its own. The eradication of ground squirrels and extensive irrigation of an agricultural area contribute to the scarcity of both the ground squirrel and burrowing owl in California.

Towards the end of the spring 1991 survey, a pair of burrowing owls was observed regularly in a ground squirrel colony, west of the junction of Patterson Pass and Grant Line roads in a non-irrigated cattle pasture (Figure 4.13-6). Other potential burrowing owl nesting sites are located on the project site, especially north of Byron Road; however, only this one pair was observed during the course of the spring survey.

⁵California Department of Fish and Game fully protected species: protection of some scarce or declining species that do not fall within other protection categories (Section 4700, Chapter 8; Section 5050, Chapter 2, Division 6; Chapter 1, Section 5515 of California Department of Fish and Game Code).

Tricolored Blackbird (*Agelaius tricolor*) — No State Listing; Federal Candidate 2 Species. The tricolored blackbird is similar to the abundant red-winged blackbird, and its numbers appear to be declining in California (Zeiner, et al., 1990). On 20 and 21 April, flocks of about 45 individuals were observed feeding in an oat field near the marsh north of Byron Road near the western site boundary (Figure 4.13-4a and Figure 4.13-6).

The presence of this bird in flocks at the time of the survey suggests that nesting during the unusually late spring of 1991 had not yet begun. The fact that no specimens were observed on the site after these dates suggests that this marsh is not a popular nesting site for this species.

Western Pond Turtle (*Clemmys marmorata pallida*) — State Species of Concern, Priority 2; Federal Candidate 2. The loss of natural marshes and ponds, coupled with the channelization of the Delta river systems, has been responsible for the loss of this reptile's shallow shoreline foraging areas and sandbar and flat bank sites where it can dig nests for its eggs. The western pond turtle has declined steadily throughout California in recent years. The species is the only aquatic turtle in California and one of only two native turtles in the State.

Two specimens were observed basking on the edge of the southern shoreline of Old River, approximately in the middle of the northern border of the site (Figure 4.13-6). The dense aquatic vegetation promotes numerous small fish species which supply a large part of the turtle's diet. This segment of the Delta river system in the greater Tracy/Brentwood area is unique in that its southern shore supports an extensive zone of good aquatic turtle habitat.

The Potential for Other Protected Wildlife Species on the Site

In addition to the protected wildlife species actually documented on the project site during the spring 1991 survey, a number of other species have geographic ranges that include the survey area. These species are briefly reviewed by habitat preference groups below.

The peregrine falcon (*Falco peregrinus anatum*), a State- and Federal-listed endangered species, may occasionally fly over the project site and conceivably spend one or more days foraging for rock dove and other grain-eating birds in the area. This species has been observed by this EIR wildlife biologist once or twice per year during the past 25 years while commuting between San Joaquin County and the East Bay. The prairie falcon (*Falco mexicanus*) has also been observed along Byron Road between I-580 and Byron. However, the project site does not offer any prime habitat to either of these species, which explains their infrequent occurrence.

One additional cropland foraging bird is the Aleutian Canada goose (*Branta canadensis leucopareia*). The Central Valley is the main wintering ground for this Federal-listed endangered subspecies. Like other geese, it forages on newly sprouted grasses including oat and barley. Thus, on a given evening, it is conceivable that

4.13 BIOLOGICAL RESOURCES

a flock of Aleutian Canada geese would settle into the project site to graze. However, no such observation was made during the course of the spring 1991 survey.

Two other wintering migrants that may forage in the cropland areas, after heavy winter rains have temporarily saturated the fields, are the white-faced ibis (*Plegadis chihi*) and the mountain plover (*Charadrius montanus*), both Federal candidate 2 species. Like the other avian species in this group, their use of the project site is a matter of chance and highly dependent upon rainfall and winter crop selection for a particular year.

The San Joaquin pocket mouse (*Perognathus inornatus inornatus*), a Federal candidate 2 species, has a geographic range which includes the project site (Jameson, 1988). Pocket mice are dry-land adapted rodents that rely heavily on extensive burrow systems for survival. They also need relatively flat, open land for rapid escape from predators and a sustained source of small seeds, which is their major food requirement. Except for the small alkali sink area on the site (Figure 4.13-6), the survey area did not contain habitat conditions that matched these requirements. The sink area was closely examined for the distinctive burrow systems and tracks of this rodent, but none was found.

One protected reptile, other than the western pond turtle, has a historic geographic range which also includes the survey site (Stebbins, 1985). This reptile is the giant garter snake (*Thamnophis couchi gigas*), a State-listed threatened and Federal candidate 2 species. The giant garter snake is a marsh and backwater species that once thrived in the many natural sloughs and meandering side channels of the Delta river system. Confinement of the rivers to high-banked levee systems has greatly reduced the abundance of the reptile. The project site contains no habitat currently suitable for this snake, and ongoing field studies by the California Department of Fish and Game have failed to confirm the snake's presence south of the City of Stockton.

Two protected amphibian species occur northwest of the site and most likely existed on the site in recent time. These are the red-legged frog (*Rana aurora*) and the California tiger salamander (*Ambystoma tigrinum californiense*). They are both pond-spawning species. Ideal conditions for the red-legged frog include a permanent pond with lush shoreline cover. The salamander will spawn in temporary ponds with barren shorelines, but must have nearby retreat sites in the form of rodent burrow systems in which to retreat during the hot, dry months. Although remnants of both pond types are located in the western portion of the site, no specimens of either species were observed on the site in spring 1991. The observation period included the heavy rain sequence in late March when California tiger salamanders at sites in the greater Bay Area migrated to breeding ponds and spawned. Driving on County roads within and adjacent to the project site during two rainy nights in March failed to produce sightings of this species. This result is consistent with that obtained by Mullen (1990) during a similar survey for the applicant.

Two Federal and State candidate fish species possibly found in the Old River area are the Sacramento splittail (*Pogonichthys macrolepidotus*) and the delta smelt (*Hypomesus transpacificus*). Seine sampling along

the Old River shoreline did not produce either of these species in April 1991, but at some future date, each species could use the rich inshore zone of the entire southern shoreline bordering the project site.

Three protected invertebrate species are known to exist in the project vicinity: the curved foot Hygrotus diving beetle (*Hygrotus curvipes*), the longhorn fairy shrimp (*Branchinecta longiantenna*), and the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). The curved-foot Hygrotus diving beetle and the longhorn fairy shrimp prefer natural pond and spring pool conditions, whereas only highly-disturbed stock ponds and irrigation ditches are located on the site. Dip net sampling failed to produce either species in mid-May 1991.

The valley elderberry longhorn beetle occurs in San Joaquin County where elderberry plants (*Sambucus sp.*) comprise part of the local riparian community. No elderberry bushes were observed on the project site, and without this specific larva feeding plant, the adult beetle cannot colonize an area.

Summary of Wildlife Status at the Project Site

There has been a reduction of the overall species diversity due to the near total conversion of the area to cropland. In comparison to a natural site, the complement of resident wildlife species has been significantly reduced. However, the on-site alfalfa promotes annual crops of rodents and insects which could never be equalled by the alkali sink and upland grassland areas that once occupied much of this site. These abundant prey resources now appear to attract and maintain abnormally high populations of selected bird species, particularly raptors, which are now highly, if not totally, dependent on the agricultural plant community for their existence.

IMPACTS AND MITIGATION MEASURES

The CEQA Guidelines indicate that a project will normally have significant adverse impacts if it interferes substantially with the movement of any resident or migratory fish or wildlife species; substantially affects a rare or endangered species of animal or plant or their habitat; and/or substantially diminishes habitat for fish, wildlife or plants. For the purpose of this DEIR, the following are considered potentially significant biological impacts: 1) elimination of endangered and threatened species habitat; 2) interference with movement of terrestrial species; 3) elimination of seasonal wetlands; and, 4) potential disturbance of riparian edge habitat in Old River.

Impact

- 4.13-1 Development of the proposed project would result in the elimination of all existing agricultural wildlife habitat, totaling approximately 4,270 acres. Some of this habitat is used by State and Federal protected wildlife species.**

Implementation of the Mountain House development plan would eliminate all of the agricultural cropland on the site which supports a range of wildlife species. Of greatest concern is the 1,500 acres between Byron

Road and Old River, where an abundance of mammalian and avian predatory species occupy the higher food niche levels (Figure 4.13-6). The proposed replacement of cropland north of Byron Road with residential and industrial complexes, a marina, and strips of recreational open space between these other units would offer no viable alternative habitat for wildlife, including several State and Federal protected species, that currently forage and/or live permanently on the site.

Mitigation Measures

- 4.13-1(a) *The entire area north of Byron Road containing approximately 1,500 acres should be set aside as an agricultural preserve to be enhanced and managed for the Swainson's hawk and other protected wildlife species.⁶*

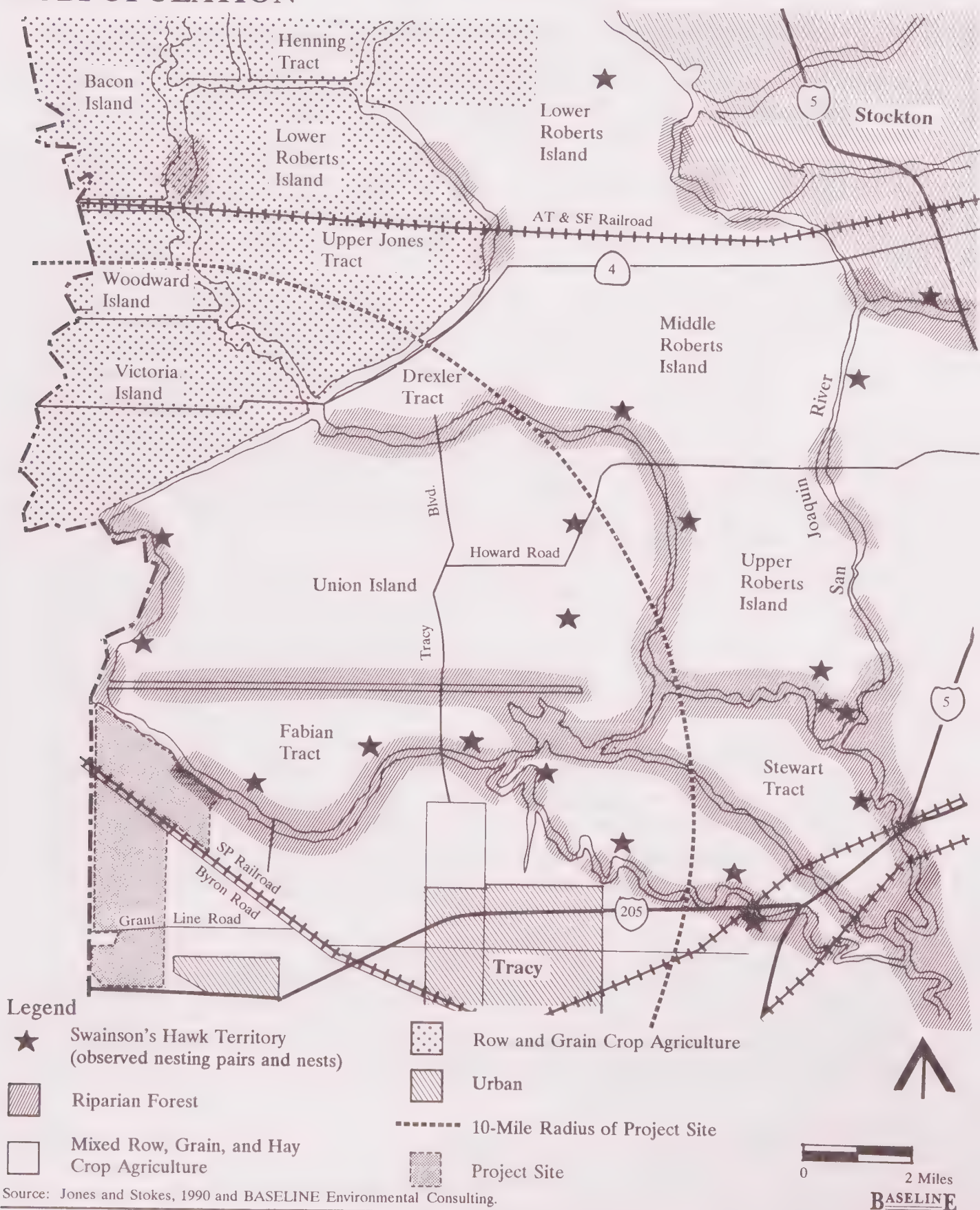
Given the minimum mitigation bank foraging acreage to support one pair of Swainson's hawk (CDFG, 1990), preservation of this portion of the project site should adequately accommodate the one known pair that forages there, plus numerous other observed individuals (Figure 4.13-11). This latter group may have also included pairs which were not as easily recognized as the pair with contrasting color patterns. Support for this idea is given in the habitat conservation plan for this hawk in San Joaquin County which documents nine off-site Swainson's hawk nests or nesting pairs within 10 miles of the Byron Road-Old River segment of the project site (Jones & Stokes, 1990) (Figure 4.13-11). Ten miles is the accepted average foraging distance for one Swainson's hawk pair (CDFG, 1990).

- 4.13-1(b) *A management and enhancement plan should be developed and implemented for the recommended agricultural preserve (see Mitigation Measure 4.13-1a), which will ensure a highly productive foraging habitat in perpetuity for the Swainson's hawk. The management and enhancement plan should include the enhancement of the riparian zones of Old River and Mountain House Creek.*
- 4.13-1(c) *The recommended management and enhancement plan should seek to create agreements with the present and future owners whereby a guaranteed minimal acreage of alfalfa would always be in production. This guarantee would be accomplished by designing a master decade-by-decade alfalfa rotation plan to which all farm owners and operators must adhere. It would also specify what crops would be beneficial to hawks during the normal one-year soil reconditioning period between alfalfa rotations. Other provisions of the agreements would focus on the vegetation of*

⁶This mitigation measure is based on the "Mitigation Guidelines for the Swainson's hawk (*Buteo swainsoni*) in the Central Valley of California," published and distributed by the California Department of Fish and Game, September 1990 (Appendix 10.16). While these guidelines are considered interim, they will remain in effect until a comprehensive Swainson's Hawk Habitat Conservation Plan is completed by the California Department of Fish and Game (Zezulak, 1991). In basing mitigation recommendations on this one protected species, all other wildlife species on the site associated with agricultural crop production are taken into account.

NESTING DISTRIBUTION OF THE SOUTH DELTA SWAINSON'S HAWK SUBPOPULATION

Figure 4.13-11



irrigation ditch banks and the dedication of small segments of land throughout the area to fallow plots on which natural vegetation could develop.⁷

4.13-1(d) *The management and enhancement plan should clearly state that rodenticides should be strictly prohibited along with the use of any wildlife "scare guns." Fire crackers and hunting should not be allowed. The final element of the recommended management and enhancement plan should be a monitoring program that would provide an annual written review submitted to the DFG for the first five years and thereafter every three to five years.*

4.13-1(e) *To confirm the presence of the San Joaquin kit fox, additional surveys should be undertaken during the first half of 1992 when the kit fox pups are active outside of the den. This survey ~~should~~ will be conducted prior to approval of the Specific Plan. Results of the survey may conclude that on- or off-site mitigation would be required. If off-site mitigation is recommended, the land use map would not change. However, acquisition for off-site habitat should occur prior to approval of the Specific Plan. If on-site mitigation is required, a General Plan amendment must be adopted prior to approval of the Specific Plan.*

4.13-1(f) *Alternative. In lieu of setting aside acreage on-site as described in 4.13-1(a) above, off-site mitigation could be considered, providing the new site meets the following criteria: 1) represents a wildlife corridor connecting the Byron-Marsh Creek area with the west Tracy area and containing alfalfa, irrigated pasture, and alkali sink in similar proportions to the project site;⁸ 2) abuts river/riparian zone; 3) contains feeding perches; 4) has roosting and nesting sites nearby; and 5) is undisturbed by noisy human activities. This area would be subject to the management and enhancement plan described above, but tailored to fit the specifics of the chosen site.*

Impact

4.13-2 **The project would block the movement of most terrestrial species listed in Appendix 10.16 between the eastern base of the Altamont Hills and the Delta-farmland region to the east.**

⁷A conservation easement can be granted with the land continually being farmed under certain restrictions. The deeded party, such as a land conservation trust, is obligated to enforce the restrictions. This can be done through a wildlife agency, e.g., Department of Fish and Game, or a trust management organization, such as the Center for Natural Lands Management (Connolly, 1991). Conservation practices, crop production, and rotation guidelines would be established by the Department of Fish and Game.

⁸The Guidelines for Swainson's hawk management (see footnote 6) call for a minimum of 1,200 acres per nesting pair. The recommendation for 1,500 acres is conservative, given that at least one pair and numerous individual Swainson's hawks were observed foraging on-site.

The development of the site south of Byron Road would block wildlife movement to and from the upland areas southwest of the site to the Delta area north of the site. While the Mountain House Creek riparian zone has been significantly altered, its proposed conversion to a "community park" would negate its function as a thoroughfare for wildlife movement, particularly if the community park provides for active park use and is landscaped with lawns and domestic shrubs and trees, rather than restored as a natural riparian corridor.

Mitigation Measures

- 4.13-2(a) *A wildlife corridor should be developed and maintained along the entire length of Mountain House Creek through the project site. The width of the corridor should be a minimum of 100 feet ~~on each side of the creek~~ measured from the ~~upper edge of the bank~~ **centerline of the creek**. The creek bed should be cleaned of silt and enhanced through the construction of occasional pool areas. The buffer zone should be planted with riparian vegetation, including native riparian trees such as Fremont cottonwood, sycamore, and willow.*
- 4.13-2(b) *Hiking and bike paths for this area should be placed on the outer edge of the riparian zone, and human access into the zone should be discouraged through the use of unobstructive fencing and informative signs.*
- 4.13-2(c) *Streets crossing this corridor should be minimized and designed to allow for free movement of wildlife which may use the corridor.*
- 4.13-2(d) *A habitat monitoring plan for the restored corridor should be developed and implemented for the first five years of its existence to ensure the successful establishment of the riparian vegetation complex and to assign responsibility for maintenance.*

Impact

- 4.13-3 **Development of the project site would eliminate seasonal wetlands and periodic wetland areas such as irrigated pastures and drainage swales.**

The Mountain House project would eliminate 3.3 acres of emergent⁹ wetland in the northwest portion of the site (Figure 4.13-4a), smaller scattered areas of emergent wetlands totaling 5.1 acres along Mountain House Creek, 11.4 acres of permanent irrigated pasture, and 7.7 acres of drainage swale (Trimark Communities, 1990). This action would eliminate the use of the project site by marsh-nesting birds such as the red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), and the tricolored blackbird (*Agelaius tricolor*), a Federal candidate 2 species. It will also eliminate several breeding populations of the Pacific tree frog (*Hyla regilla*), an important prey item for many reptilian, avian and mammalian species. Additionally, the existing seasonal wetlands afford good feeding opportunities to migratory and resident inland shorebird species such as long-billed curlew (*Numenius americanus*), black-necked stilt (*Himantopus mexicanus*), common snipe (*Capella gallinago*), greater yellowlegs (*Totanus melanoleucus*), and killdeer (*Charadrius vociferus*). These and other water birds depend heavily on periodically flooded pasture land since this type of crop substitutes well for the wet marsh fringe areas that have been lost in the conversion of the Central Valley marsh system to agriculture.

⁹Wetlands in which aquatic vegetation emerges through the water surface.

The development plan depicts a 40-acre area designated open space-resource conservation at the base of Mountain House Creek. It is the applicant's intent to consolidate all of the on-site wetlands, with the exception of the marsh north of Byron Road and adjacent to Kelso Road, into one wetland providing State and Federal agencies approve of this concept (Gross, 1991). The acreage is also dependent on the final wetland delineation by State and Federal agencies. Other than designated as a wetland, the specific use of this os/rc area has not been determined. Providing the 40 acres can be used as replacement wetland, the above impact could be partially mitigated. The 40 acres could not totally mitigate for the extensive foraging opportunities presently afforded birds by the irrigated crop and pasture land.

Mitigation Measures

- 4.13-3(a) *The 3.3-acre emergent wetland in the north area of the site should be preserved and expanded to approximately twice its current size to mitigate for the presumed loss of additional emergent wetland segments (approximately seven acres) resulting from the development of the acreage south of Byron Road. A qualified professional should oversee the preservation and enhancement project and be responsible for its maintenance. **According to Section 404 of the Clean Water Act, the applicant would be required to obtain approval from the U.S. Army Corps of Engineers for any impacts on wetlands and a wetlands mitigation plan would be required.***
- 4.13-3(b) *A specific proposal or design of the 40-acre wetland should be ~~provided for inclusion~~ **included** in the Specific Plan, **providing State and Federal wildlife agencies have approved of this concept.***

Impact

- 4.13-4 **Construction and operation of the proposed 60-acre marina would impact the productive inshore zone and riparian edge habitat of Old River.**

Development of the marina on Old River would substantially increase boat traffic and speed on Old River. Presently, one small boat per hour may motor up Old River past the project site during the summer months. Boat traffic is comprised almost entirely of fishing skiffs and rarely does a water skiing vessel utilize this stretch of water. A 60-acre marina would undoubtedly produce heavy boat traffic throughout most of the year. Use of the river by the marina users would create the following impacts to fish and wildlife: 1) disturbance of shoreline wildlife with unfamiliar sounds and movements, 2) churning up of the productive, heavily vegetated inshore zone along the southwest bank, 3) creation of heavy wave action that would erode the levee banks and destroy the thin riparian strip of vegetation presently growing there, 4) introduction of petroleum pollutants to this zone and the rest of the river area, and 5) killing of many small fish and aquatic invertebrates through the direct action of propellers and engine water cooling systems. The experience of fishing quietly along one of the few remaining backwater stretches of Delta waterways would vanish.

The Hydrology and Water Quality section (Section 4.7) of this DEIR estimates that water stagnation and algae blooms could occur within the marina waters due to a 10- to 12-day resident time for water entering this area. The movement of surface algae blooms out of the marina and into the vegetated inshore zone of Old River could adversely affect oxygen availability for young fish in this area. Because the marina waters may be perceived by small fish as a backwater slough area similar to what they would normally grow up in,

many may enter the marina only to be killed by the high pollutant levels and low oxygen availability. The silt loads placed into Old River during the construction phase of the marina and then confined by the action of the upstream tidal barrier could fill in a considerable portion of the productive Old River shoreline area.

Mitigation Measures

- 4.13-4(a) *The proposed 60-acre marina should be eliminated in favor of a boat launch ramp and day use parking lot for the private use of the residents of the new community. **Boats with motors exceeding 10 hp should not be permitted in this segment of the River.** This facility could be fashioned along the lines of other San Joaquin County public use ramps and picnic areas such as those located off Manley Road in the Mossdale area and at the end of Dos Reis Road west of Lathrop. This would provide easy access to the Delta system for the residents of Mountain House New Town while at the same time eliminate many of the potential hazards to the Old River aquatic system caused by a marina operation.*
- 4.13-4(b) *Signs should be posted restricting boat traffic and limiting boat speeds to 5 mph along the length of the project site fronting Old River.*
- 4.13-4(c) *Also refer to mitigation measures in Section 4.7, Hydrology and Water Quality.*
- 4.13-4(d) **Prior to approving a Specific Plan, a survey should be conducted along the banks of Old River to confirm the presence of the California hibiscus, a Federal candidate 2 species. This survey must be done in August and September, the plant's blooming period.**
- 4.13-4(e) **A survey should be conducted of Old River along the segment bordering the project site to confirm the presence or absence of the Delta smelt. The survey should be conducted with the use of an otter trawl at intervals during the spring spawning season and prior to approval of the Specific Plan. If the species were detected, policies and specific measures for its protection should be incorporated into the Specific Plan. The Specific Plan should also determine if Delta smelt would be impacted by increased water demands.**

4.14 TRANSPORTATION SETTING

State and Regional Highways

The project site is located within one mile of two interstate freeways that provide regional access from the San Ramon/Livermore Valley and the Bay Area to the west, and from Stockton and Sacramento to the east and north. The primary east-west route is Interstate 580 (I-580), which starts at Interstate 5 (I-5) southeast of Tracy, continues westward through Alameda County, and terminates in the San Francisco Bay Area (Figure 4.14-1). Interstate 205 (I-205), which traverses approximately 13 miles from I-5 northeast of Tracy to the I-205/I-580 junction at the Alameda-San Joaquin county line, forms the southern boundary of the project site (Figure 4.14-1). I-205 provides an important connection from the Central Valley to I-580 and the Bay Area.

I-580 is an eight-lane freeway from west of Altamont Pass to the junction with I-205, and a four-lane freeway southwest of the I-580/I-205 junction to its terminus at I-5, a distance of about 16 miles. I-205 is a four-lane freeway over its entire length except for a short five-lane segment immediately east of the I-580/I-205 junction, which consists of three eastbound lanes and two westbound lanes.

The I-580/I-205 junction is a freeway-to-freeway interchange that allows traffic movement on I-580 from eastbound to southbound and from the reverse northbound to westbound direction. The interchange also provides for through-traffic movement from westbound I-205 to westbound I-580, and from eastbound I-580 to eastbound I-205. No access is available between I-580 south of the junction and I-205 east of the junction (i.e. northbound to eastbound or westbound to southbound).

Five other freeway interchanges connecting to local roads are located within five miles of the project site. One, I-580 at Grant Line Road, is west of the project site (Figure 4.14-1). Three interchanges are east of the site, on I-205 at Patterson Pass Road, 11th Street, and Grant Line Road. One interchange is south of the site on I-580 at Patterson Pass Road (Figure 4.14-1). All of these interchanges are full diamond interchanges except the 11th Street interchange, which provides high-speed access in two directions, from Tracy to westbound I-205 and from eastbound I-205 into Tracy (Figure 4.14-1).

Byron Road is a two-lane rural highway connecting the Brentwood area with downtown Tracy. Byron Road passes diagonally through the northern portion of the project site and terminates at 11th Street in downtown Tracy (Figure 4.14-1).

Local Roads

The project site is served by several two-lane rural roads that are within the multiple jurisdictions of Alameda County, San Joaquin County, and the City of Tracy. These roads include Grant Line Road, Mountain House Road, Altamont Pass Road, and Patterson Pass Road (Figure 4.14-1). These roads have generally straight alignments and posted speed limits of 50 mph, except for approximately three miles of Mountain House Road from the Delta Mendota Canal to Altamont Pass Road, where Mountain House Road is curving and has a posted speed limit of 35 mph.

PROJECT SITE VICINITY ROADWAYS

Figure 4.14-1



Grant Line Road is a main east-west local route that crosses the southern portion of the project site (Figure 4.14-1). Grant Line Road is offset at Byron Road; the segment continuing to the east is about one-half mile southeast of the segment that crosses the project site (Figure 4.14-1). Mountain House Road runs approximately one mile west of the Alameda/San Joaquin county boundary between Byron Road and Grant Line Road (Figure 4.14-1). Altamont Pass Road, which parallels I-580 through the Altamont Pass to the Livermore area, has freeway access to I-580 via interchanges with Grant Line Road and Greenville Road (Figure 4.14-1). Patterson Pass Road provides a connection between Byron Road, I-205, and I-580, with standard full diamond interchanges at the two freeways (Figure 4.14-1). South of Byron Road, Patterson Pass Road forms the project site's eastern boundary. Eleventh Street, a four-lane major arterial providing access to central Tracy, is not directly accessible from the project site without use of Grant Line Road, Byron Road, and/or Patterson Pass Road and I-205 (Figure 4.14-1).

Several other two-lane minor local roads cross or terminate at the project site. Kelso Road, which crosses Byron Road, provides local access to the northwest portion of the site, while Henderson Road and Bethany Road provide access to the northeast portion of the site. Von Sosten Road provides local access south of Grant Line Road between Byron Road and Patterson Pass Road (Figure 4.14-1).

Existing Traffic Volumes

Existing (1990) traffic volumes on study area highways and streets were collected from various sources, including the Alameda County Department of Public Works, the San Joaquin County Council of Governments, Caltrans, the project sponsor's traffic consultant, and DKS Associates file counts. Both average daily traffic (ADT) and peak hour traffic volumes were collected. Daily traffic volumes serve as general indicators of the function of the road, while peak hour volumes are used to determine Levels of Service (LOS), which are indicators of the quality of traffic operations during periods of the highest traffic demands of the day (see Appendix 10.17 for Level of Service descriptions).

The highest daily traffic volumes in the study area are handled by I-580, which carries total two-way daily traffic of about 90,000 vehicles near the County line immediately west of the I-580/I-205 junction (Caltrans, 1991) (Figure 4.14-2). South of this junction, the volume on I-580 drops to about 25,000, while I-205 carries the remaining 65,000 vehicles daily east of the I-205/I-580 interchange (Figure 4.14-2).

I-580 is an important east-west route for truck travel; average daily traffic on I-580 at the Altamont Pass includes about 15 percent truck traffic based on recently-published Caltrans reports on truck traffic on State highways (Caltrans, 1989). Recent peak-period truck traffic counts for I-205 indicate that the AM peak period traffic stream is about 12 percent heavy vehicles (trucks, light trucks, buses, and recreational vehicles), while the corresponding portion for the PM peak-period traffic stream is about eight percent (Korve Engineering, Inc., 1990).

Most of the other study area roads have ADT volumes of less than 5,000 (Figure 4.14-2). Exceptions are 11th Street, with an ADT of about 11,000; Byron Road, which carries about 8,000 vehicles daily northwest of the

EXISTING 1990 AVERAGE DAILY TRAFFIC (ADT) VOLUMES

Figure 4.14-2

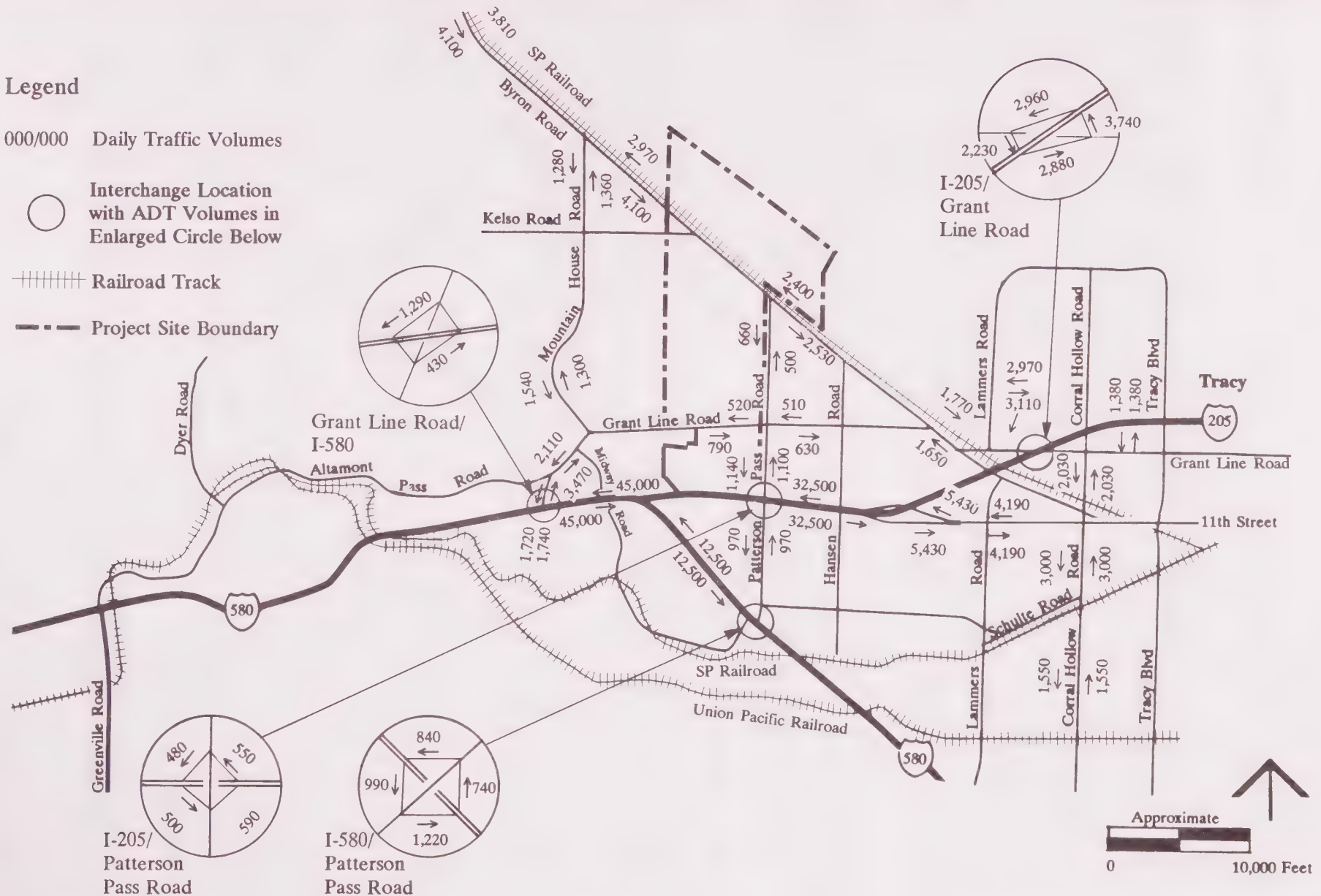
Legend

000/000 Daily Traffic Volumes

○ Interchange Location with ADT Volumes in Enlarged Circle Below

++++ Railroad Track

- - - Project Site Boundary



project site, and Grant Line Road with ADT volumes of about 5,500 near its intersection with Altamont Pass Road (Figure 4.14-2). At the project site, Byron Road has an ADT volume of about 4,900, Grant Line Road has an ADT volume of about 1,300, and Patterson Pass Road carries about 2,200 vehicles daily near the I-205 interchange (Figure 4.14-2). North of Grant Line Road, the ADT on Patterson Pass Road is reduced to about 1,160.

Commute Period Characteristics on I-580 and I-205

The I-580 and I-205 freeways have pronounced peak-period directional splits, with the higher volumes westbound in the morning and eastbound in the evening. Up to 80 percent of the total two-way peak hourly volume on these freeways is in the peak direction. This strong directional bias places high demands during peak periods on road capacity which is not drawn upon during most of the day.

A 1988 survey of PM peak-period eastbound traffic at the Altamont Pass conducted for the Metropolitan Transportation Commission, San Joaquin County Council of Governments, and Caltrans provides additional detail about travel patterns on I-580 (DKS Associates, 1988). It is reasonable to assume that these patterns also apply to I-205, which has similar characteristics in terms of freeway volumes and directionality. During the 3:30-6:30 PM peak period covered in the survey, commute trips accounted for more than 80 percent of the total eastbound volume on I-580 based on the survey responses (DKS Associates, 1988).

Trip origin and destination data collected in the survey provide useful information about commute patterns. Trip origins for eastbound PM peak travel are generally indicative of work locations, while destinations indicate residence locations. About 50 percent of the eastbound trips originated in the Tri-Valley¹ area, including about 25 percent originating in Pleasanton or Livermore. Another 25 percent of the total trips originated in the remainder of the East Bay (Alameda County and the portions of Contra Costa County outside the Tri-Valley area). Santa Clara County accounted for about 16 percent of trip origins. The City of Tracy was the most common destination, accounting for about 33 percent of the total. Other main destinations included Manteca (20 percent); Modesto (15 percent); and Stockton (10 percent). The remaining 22 percent of the destination points included communities east and north of the Altamont Pass in east San Joaquin County (seven percent) and east Contra Costa County (four percent), as well as locations out of the region (eleven percent).

Based on Caltrans published reports of traffic volumes on State highways, traffic volumes on I-580 at the Altamont Pass have increased an average of 12 percent per year since the early 1980s (Caltrans, 1981-1991). Volumes on I-205 increased at an even greater rate of nearly 17 percent annually over the same time period (Caltrans, 1981-1991). Only in recent years has congestion on the Altamont Pass and on I-205 become a substantial problem; the period of rapid growth in this portion of the Central Valley during the 1980s began at a time when traffic volumes on both freeways were well below capacity.

¹ Tri-Valley area includes San Ramon Valley, Livermore Valley, and Amador Valley.

Levels of Service

AM and PM peak hour volumes were used to determine existing levels of service (Figure 4.14-3). The peak hour is the single hour during the morning and the afternoon peak periods during which the highest hourly volume on a given road occurs. Typically, the peak hour falls within the 7 to 9 AM and 4 to 6 PM time periods. However, the commute pattern on I-580 is such that the peak period frequently begins earlier in the morning, when the majority of traffic is traveling west toward the Bay Area employment centers. For this reason, the assessment of freeway LOS was based on a three-hour peak period (6-9 AM and 3-6 PM), to ensure that early peaks were not overlooked.

Levels of Service are letter grades of A through F which designate the quality of operation for the specific type of road being evaluated, during periods of peak demands on facility capacity (see Appendix 10.17 for Level of Service descriptions). LOS analysis in this DEIR is based on segment volumes rather than intersection turn movements to be consistent with the planning level of detail for this DEIR as a whole. The LOS methodologies used are from the 1985 *Highway Capacity Manual* (Transportation Research Board, 1985).² Levels of Service were calculated for I-580 and I-205, key local roads and highways, and freeway ramps at the interchanges of I-580 with Grant Line Road and Patterson Pass Road and at the I-205 interchanges with Patterson Pass Road, 11th Street, and Grant Line Road (Figure 4.14-4). Analysis of freeway segments is based on the 1990 edition of Caltrans' *Traffic Volumes on State Highways* (Caltrans, 1991), with directional splits obtained from recent directional counts on I-580 (Caltrans, 1990).

The Revised Draft San Joaquin County General Plan 2010 calls for LOS standards for all roads classified as minor arterials or higher (San Joaquin County, 1991a). For roadway segments the following Draft General Plan 2010 minimum LOS standards are in effect:

- On all State highways: LOS D.²
- Within a city's sphere of influence: LOS D, or LOS C when the plans call for LOS C or better.
- On all other roads: LOS C.

Most study area freeways and roads operate at LOS C, or better, during peak periods, with two exceptions (Figure 4.14-4 and Table 4.14-1). I-580 functions at LOS E in the eastbound direction west of the I-205/I-580 junction during the PM peak period, with average speeds around 45 mph. I-205 operates at LOS F during



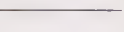
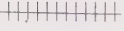

² LOS for freeway segments follows the 1985 *Highway Capacity Manual* designations based on the volume-to-capacity (v/c) ratio (Chapter 3, Table 3-1), which is shown below. The LOS ranges for freeway segments used by the County are: A, 0.35 v/c; B, 0.54 v/c; C, 0.77 v/c; D, 0.93 v/c; E, 1.00 v/c; F, >1.00 v/c. For other existing County roads, criteria in Chapter 8 of the 1985 *Highway Capacity Manual* were used (Transportation Research Board, 1985). These criteria take into account roadway grades, passing sight distances, and other design factors.

Note that Caltrans, District 10, uses a more restrictive standard (LOS C) for State highways in rural areas.

EXISTING 1990 PEAK HOUR TRAFFIC VOLUMES

Figure 4.14-3

Legend

-  Interchange Location
(See Enlargement for Peak Hour Counts)
-  PM Peak Hour Volume
-  AM Peak Hour Volume
-  Railroad Track
-  Project Site Boundary



Sources: DKS Associates 1989, Caltrans 1990, San Joaquin County 1990, Alameda County 1989-1990, Korve Engineering 1990

R10114 10/23/91

BASELINE

EXISTING 1990 LEVELS OF SERVICE (LOS) STUDY AREA ROADWAY SEGMENTS

Figure 4.14-4

Legend



A/D

PM Level of Service
AM Level of Service

Railroad Track

Project Site Boundary

* Departure Point for AMTRAK
Feeder Bus Service



approximately half of the three-hour PM peak period in the eastbound direction, with unstable speeds below 35 mph and noticeable congestion. Based on limited field observations, eastbound I-205 is most congested between 4:00 and 5:30 PM, when traffic operates in forced flow³ conditions with frequent stops (DKS Associates, 1991). I-205 generally is not congested during the remainder of the PM peak period. During the AM peak period, I-205 operates acceptably, which is considered LOS D or better. Existing ramps and interchanges in the study area generally operate with minimal delays during peak periods and at all other times of the day. Detailed information included in the Level of Service calculations is included in Appendix 10.17.

TABLE 4.14-1

**EXISTING FREEWAY LEVELS OF SERVICE
1990 PM Peak Hour**

Location	Number of Lanes in Each Direction	Peak Hour Volume		Percent Heavy Vehicles		Volume-to-Capacity Ratio		Level of Service	
		West-bound	East-bound	West-bound	East-bound	West-bound	East-bound	West-bound	East-bound
I-580 west of I-205 junction	4	2,670	7,230	8.7	4.8	0.35	0.93	B	E
I-580 east of I-205 junction	2	825	1,925	15.0	15.0	0.23	0.53	A	B
I-205 at Patterson Pass Road	2	1,910	4,690	7.5	7.5	0.50	1.23	B	F

Note: Bold letters indicate locations where County standards for acceptable LOS are not met under existing conditions.

Rural road LOS analysis indicates average travel speeds and satisfactory frequency of passing opportunities, which are measures of the quality of traffic flow, as perceived by the driver. LOS A and B indicate satisfactory passing opportunities and free flow speeds of over 50 mph. Most of the study area roads currently operate at LOS A or B (Table 4.14-2). LOS C indicates the formation of "platoons," or groups of cars formed by one slightly slower vehicle which impedes travel at the desired speed, with passing ability hindered by the "platoons." Free flow speed is still over 50 mph on straight rural roads with LOS C

³ Forced flow conditions refer to conditions where queues form behind breakdown points, with resultant stop-and-go traffic flow. Queues on existing freeways result from incidents which reduce capacity, or recurring congestion related to design factors (lane drops, merging/weaving, etc.). With regard to future traffic volumes, forced flow refers to projected volumes that exceed estimated capacity at a given location.

TABLE 4.14-2

EXISTING LEVELS OF SERVICE FOR RURAL ROADS IN THE PROJECT AREA

Roadway Segment	Input Parameters							Computed Results			
	Terrain	Percent No Passing ¹	Percent Trucks	Design Speed	Directional Distribution ²	Peak Hour Factor ³	Peak Hour Volume	Adjusted Peak Hour Volume	Computed Maximum Service Flow Rate (capacity)	Volume-to-Capacity Ratio	Level of Service ⁴
AM Peak Hour											
Grant Line Road, Hansen Road-Byron Road	Level	0	5	60	81/19	0.84	135	160	2,192	0.07	A
Grant Line Road, Altamont Road-Mountain House Road	Level	100	5	60	84/16	0.91	415	456	2,218	0.21	C
Grant Line Road, Mountain House Road-Patterson Pass Road	Level	0	5	60	81/19	0.85	160	187	2,192	0.09	A
Grant Line Road, Byron Road-I-205	Level	100	5	60	69/31	0.91	525	575	2,387	0.24	C
Byron Road, Grant Line Road South-Grant Line Road North	Level	100	10	60	70/30	0.91	525	585	2,265	0.26	C
Byron Road, Grant Line Road North to Patterson Pass Road	Level	0	10	60	60/40	0.91	410	451	2,355	0.19	B
Byron Road, Patterson Pass Road-Mountain House Road	Level	0	10	60	60/40	0.91	450	495	2,393	0.21	B
Byron Road, I-205-Grant Line Road South	Level	5	10	60	53/47	0.90	290	323	2,500	0.13	A
Byron Road Northwest of Mountain House Road	Level	0	10	60	59/41	0.92	735	795	2,408	0.33	C
Patterson Pass Road, Grant Line Road-Byron Road	Level	0	5	60	59/41	0.83	85	102	2,523	0.04	A
Patterson Pass Road, Grant Line Road-I-205	Level	0	5	60	74/25	0.86	175	203	2,309	0.09	A

Table 4.14-2 - continued

Roadway Segment	Input Parameters							Computed Results			
	Terrain	Percent No Passing ¹	Percent Trucks	Design Speed	Directional Distribution ²	Peak Hour Factor ³	Peak Hour Volume	Adjusted Peak Hour Volume	Computed Maximum Service Flow Rate (capacity)	Volume-to-Capacity Ratio	Level of Service ⁴
AM Peak Hour											
Mountain House Road, Grant Line Road-Byron Road	Level	0	5	60	84/16	0.90	305	339	2,128	0.16	B
Altamont Pass Road West of Mountain House Road	Level	60	5	60	20/80	0.91	350	385	2,213	0.17	B
PM Peak Hour											
Grant Line Road, Hansen Road-Byron Road	Level	0	5	60	81/19	0.87	175	200	2,192	0.09	A
Grant Line Road, Altamont Road-Mountain House Road	Level	100	5	60	80/20	0.91	540	591	2,213	0.27	C
Grant Line Road, Mountain House Road-Patterson Pass Road	Level	0	5	60	82/18	0.87	190	219	2,171	0.10	A
Grant Line Road, Byron Road-I-205	Level	100	5	60	68/32	0.91	515	565	2,400	0.24	C
Byron Road, Grant Line Road South-Grant Line Road North	Level	100	10	60	73/27	0.92	695	755	2,215	0.34	D
Byron Road, Grant Line Road North to Patterson Pass Road	Level	0	10	60	71/29	0.91	490	538	2,250	0.24	B
Byron Road, Patterson Pass Road-Mountain House Road	Level	0	10	60	65/35	0.91	495	544	2,329	0.23	B
Byron Road, I-205-Grant Line Road South	Level	5	10	60	54/46	0.90	305	339	2,484	0.14	A
Byron Road Northwest of Mountain House Road	Level	0	10	60	56/44	0.92	685	745	2,454	0.30	C

Table 4.14-2 - *continued*

Roadway Segment	Input Parameters							Computed Results			
	Terrain	Percent No Passing ¹	Percent Trucks	Design Speed	Directional Distribution ²	Peak Hour Factor ³	Peak Hour Volume	Adjusted Peak Hour Volume	Computed Maximum Service Flow Rate (capacity)	Volume-to-Capacity Ratio	Level of Service ⁴
PM Peak Hour											
Patterson Pass Road, Grant Line Road-Byron Road	Level	0	5	60	52/48	0.83	105	126	2,319	0.05	A
Patterson Pass Road, Grant Line Road-I-205	Level	0	5	60	60/40	0.87	200	230	2,206	0.10	A
Mountain House Road, Grant Line Road-Byron Road	Level	0	5	60	15/85	0.90	335	371	2,107	0.18	B
Altamont Pass Road West of Mountain House Road	Level	60	5	60	60/40	0.91	420	462	2,507	0.18	B

¹ The "Percent No Passing" excludes intersection areas.

² Directional distribution based on traffic count volumes.

³ Peak hour factor (PHF) is the ratio of total hourly volume to the maximum 15-minute rate of flow. A high PHF (close to 1.00) indicates relatively constant flow throughout the peak hour; a low PHF indicates a more pronounced 15-minute peak within the peak hour.

⁴ Level of Service is based on analysis methodology for Two-lane Highways in Chapter 8 of 1985 *Highway Capacity Manual* and denotes relative ease of passing on roadway segments of significant length.

Note: Bold letters indicate locations where County standards for acceptable LOS are not met under existing conditions.

Source: DKS Associates. Traffic count sources include Kolve Engineering, Inc., 1990 and Alameda County Public Works Agency, 1990.

operations; however, the opportunity for drivers to pass at will is reduced. Detailed calculation assumptions for LOS on rural roads are included in Appendix 10.17.

Transit Service

The nearest regularly-scheduled bus service is provided by the Stockton Metropolitan Transit District (SMART). This service serves only the Stockton Metropolitan area, which is more than 25 miles from the project site. In addition, SMART operates subscription morning/evening commute service connecting the Lawrence Livermore National Laboratory, located about ten miles west of the Mountain House site, to the cities of Stockton, Manteca, and Tracy. This bus carries about 50 passengers daily and does not stop in the project vicinity. A trial commute route between Tracy and Livermore was discontinued in 1990 (Stockton Metropolitan Transit District, 1991).

Several other transit carriers operate within 5 to 20 miles of the project site, but currently do not serve the project site and would not be expected to affect the project's transportation options without major route changes and additions. Tracy Trans operates a dial-a-ride service within the City of Tracy that carried about 60,000 passengers in 1989, or about 170 per day (Tracy Trans, 1989). The Livermore-Amador Valley Transit Authority (Wheels) operates a conventional fixed-route system west of the project site in the cities of Livermore, Dublin, and Pleasanton (Livermore-Amador Valley Transit Authority, 1990). The Central Costa County Transit Authority provides daily bus service between the cities of San Ramon, Dublin, and Pleasanton and the Walnut Creek BART station (Central Costa County Transit Authority, 1990).

The nearest BART (Bay Area Rapid Transit District) station is the Bayfair station near San Leandro, some 30 miles west of the project site. The planned BART extension to Dublin would bring BART to within 20 miles of the project site. This extension is planned to be completed by the end of 1995 (Garrison, 1991). The nearest bus service which serves a BART station is operated by BART Express. BART Express routes DX (weekdays) and D (weekends) access the Walnut Creek BART station from Pleasanton, San Ramon, and Danville. The BART Express DX bus operates from approximately 4:30 AM to 12 midnight, while the D bus runs from 6:00 AM to 1:30 AM on Saturdays, and 8:16 AM to 1:30 PM on Sundays (BART, 1990).

AMTRAK operates a feeder bus service between Tracy and Stockton that connects to the AMTRAK station in Stockton. Feeder buses depart three times daily between 8:25 AM and 6:25 PM from Tracy near the interchange of Tracy Boulevard/I-205 (Figure 4.14-4) to the Stockton AMTRAK station. The AMTRAK line between Oakland and Stockton runs on the Southern Pacific track located along the south side of Suisun Bay and along the Atchison, Topeka and Santa Fe (ATSF) track through the Delta (AMTRAK, 1991).

Railroad Lines

The project site is traversed by a Southern Pacific (SP) Transportation Company track which runs parallel and adjacent to Byron Road from Tracy north to the Suisun Bay area (Figure 4.14-1). A second SP track runs from Tracy south of I-205 through the Altamont Pass (Figure 4.14-1). This line is currently inoperative. The rail track is torn up from Midway Road to west of Altamont Pass. Within Alameda County, the right

of way on the inactive SP track is owned by Alameda County and is a potential future transit corridor. A third line owned by the Union Pacific Railroad Company runs through southern Tracy, continuing through the Altamont Pass to the Bay Area (Figure 4.14-1). The two active railroad lines carry freight. The nearest passenger rail service is along the AMTRAK route discussed above.

The SP line running through the project site currently carries fewer than ten freight trains per day (both directions) between Tracy and the City of Pittsburg. Freight is carried both day and night at varying times. Projected future usage is dependent on business trends and for that reason subject to variability (McCloskey, 1991). Travel speed on this track is about 40 mph. SP is considering upgrading the track to an operating speed of 70 mph. In conjunction with the track upgrade, SP is attempting to increase its share of intermodal service from the Port of Oakland; if successful, up to an additional three trains (six one-way trips) per day could use these tracks (Korve, 1991).

Currently, there are seven grade crossings along the Southern Pacific Transportation Company track along Byron Road in the immediate project vicinity (within approximately two miles of the site to either direction along Byron Road). These are located on Herdlyn Road, Lindemann Road, Kelso Road, Henderson Road, Wicklund Road, Reeve Road, and Grant Line Road. Six of the seven streets are local access roads; only Grant Line Road carries appreciable traffic volumes. The proposed project includes retention of the existing at-grade crossings at Herdlyn Road, Lindemann Road, and Wicklund Road; upgrading of the at-grade crossings at Kelso Road and Henderson Road; and construction of a new grade-separated crossing between Kelso Road and Henderson Road. The project would thus add one new crossing, which would be grade-separated (Korve, 1991).

IMPACTS AND MITIGATION MEASURES

The CEQA Guidelines indicate that a project will normally have a significant impact if it causes an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. The San Joaquin County road standards contained in the Revised Draft General Plan 2010 propose a Level of Service (LOS) C or better on all County roads, except in a city area where the city has adopted more lenient standards, and LOS D on all freeways and State highways⁴ (San Joaquin County, 1991a). For this DEIR, impacts have been identified as significant when future traffic volumes would result in LOS not meeting standards identified in the Revised Draft General Plan 2010. Where existing LOS do not meet County standards (Tables 4.14-1 and 4.14-2), significance has been assumed when added traffic would increase volumes by five percent or more (equivalent to approximately one-half a Level of Service).

Transportation impacts are discussed in terms of the following: project area trip generation; changes in daily volumes on County roads and freeways providing local and regional connections to the project site; changes

⁴ For the purposes of this DEIR analysis, note that the LOS standards (LOS D) advocated by Caltrans, District 10, for urban State facilities have been used. However, Caltrans District 10 uses a more restrictive standard, LOS C, for rural freeways such as I-580 in San Joaquin County.

in peak hour levels of service on these facilities; internal site circulation system adequacy; and implications for transit systems, bicycle use, and pedestrians.

Methodology and Land Use Assumptions

Market and financial studies prepared in conjunction with the Revised Draft General Plan 2010⁵ (San Joaquin County, 1991a) indicate that, while the regional demand for housing supports full buildout of the proposed project's residential land by 2010, only about 44 percent of the employment originally proposed by the Mountain House sponsor could reasonably be expected by the year 2010, considering competition inside and outside the County (Economic and Planning Systems, 1991). Competing employment development within the County includes substantial employment growth projected for the City of Stockton, and also within the four other new towns proposed in the unincorporated area.

Transportation impacts resulting from two separate countywide land use scenarios are therefore evaluated in this section. The first scenario, called the Proposed Project Scenario, is based on the project as proposed by the sponsor, and assumes 100 percent buildout by 2010 of both the housing and employment within the project (**a total of 16,003 dwelling units and 19,880 jobs**). The Proposed Project Scenario also assumes other cumulative city growth by 2010, as projected in the Revised Draft General Plan 2010, except that no other "new towns" are assumed to be constructed in the unincorporated area.

The second scenario, called the Market-Constraint Scenario, assumes that all of the housing and about 40 percent of the jobs proposed in the four other "new towns" studied in the Revised Draft General Plan 2010 would be constructed, and that all of the housing (**16,003 dwelling units**) but only 44 percent of the employment (**8,583 jobs**) at Mountain House would be absorbed (constructed and occupied) by the year 2010.⁶ The countywide land use assumptions for the Market-Constraint Scenario are consistent with the Revised Draft General Plan 2010 for San Joaquin County. The Market-Constraint Scenario and the Proposed Project Scenario assume the same phasing pattern for the project's residential development. At each intermediate phase the total residential development is slightly less than proposed by the project sponsor. The developer's assumptions for the earlier phases have been modified by County staff for use in the travel model to reflect an assumed lag between housing construction and housing occupancy.

The impacts of the project are compared to a "No Project" future cumulative scenario. The "No Project" scenario assumes no development of the Mountain House project. For the remainder of the County, the "No Project" scenario assumes cumulative land uses identical to those of the Revised Draft General Plan 2010.

⁵ Throughout this section, "Revised Draft General Plan 2010," "Draft General Plan," "Revised General Plan" and "General Plan Update" all refer to the version of the Revised Draft San Joaquin County General Plan 2010 published in March, 1991. The Revised Draft General Plan 2010 analyzes five new towns, including Mountain House, that were proposed following publication of the previous Draft General Plan for the County in 1990.

⁶ The 44 percent employment buildout figure is based on a market and financial study completed as part of the Draft General Plan 2010 (Economic and Planning Systems, 1991).

Comparisons between the "No Project" scenario and the two project scenarios were used to estimate the net traffic increases due to the project on local and regional roadways. The transportation impact analysis used the San Joaquin County Council of Governments (COG) Travel Demand Model, which was significantly revised and expanded in 1991 for use in the Draft General Plan 2010 Update program.⁷ The 1991 Travel Demand Model incorporates Draft General Plan 2010 land use projections for the horizon year 2010, as well as growth projections for surrounding Central Valley counties and the nine-county San Francisco Bay Area. The 1991 San Joaquin County Travel Demand Model incorporates future transportation network improvements either programmed or considered by the County as likely to be implemented within the next 20 years.⁸ Most of these improvements are included in the COG Regional Transportation Plan (RTP).

The 1991 San Joaquin County Travel Demand Model was used to evaluate the project's trip generation, that portion of trip generation that would remain internal to the project site, and the distribution of external trips on the road network. These fundamental travel characteristics are discussed further below.

Analysis Years

In addition to the horizon year of 2010, project traffic impacts were analyzed in interim years, including 1995, 2000, and 2005. The interim year traffic forecasts are based on the 1991 San Joaquin County Travel Demand Model. Land use inputs to the model were estimated by straight-line interpolation of population and employment growth within and outside the County over the 1990-2010 time period. Assumptions regarding road facilities and conditions for the intermediate forecast years were provided as inputs to the 1991 Travel Demand Model by San Joaquin County staff.

For each phase of project development, County staff provided adjusted land use inputs to the traffic modeling for the project, taking into account findings from the EPS study of future regional employment trends (Parfrey, 1991). In general, the phasing concept of the Proposed Project Scenario matches residential development with employment growth. The decrease in the percent of residents employed within the project from ~~50~~ **51** percent in ~~2005~~ **2000** to 45 percent in 2010 is due to the **higher percentages of retail/service employment in the early phases and due to the** assumed lag between housing construction and occupancy, discussed above. This assumption means that intermediate phases would have a slightly higher jobs-to-housing ratio than the final phase, resulting in slightly higher percentages of residents employed within the site. Housing would "catch up" to employment at the final phase (2010).

⁷ San Joaquin County Travel Model Development, Draft Final Report, DKS Associates, January 1992.

⁸ See Appendix E of San Joaquin County Travel Model Development, Draft Final Report. Within the study area, major improvements assumed in the Travel Demand Model include widening I-205 from four lanes to six lanes, and widening 11th Street in Tracy from four lanes to six lanes. No improvements on I-580 over the Altamont Pass are assumed (although conditions on this section of I-580 are of growing concern) as neither the 1991 Draft Regional Transportation Plan by the Metropolitan Transportation Commission (MTC) nor the 1991 Draft Alameda County Congestion Management Plan include any long-range improvements for this corridor (MTC, 1991 and Alameda County Congestion Management Agency, 1991). However, the 10-year Inter-Regional Route System (IRRS) Plan prepared by Caltrans, District 4, identifies construction of truck climbing lanes over the Altamont Pass as a potential project.

Traffic impacts generated by the Market-Constraint Scenario will be more of a "worst case" alternative for transportation impacts on most regional facilities than the Proposed Project Scenario because of a greater out-commute due to less employment within the project site. Thus, this EIR includes the Market-Constraint Scenario analysis at an equal level of detail as the Proposed Project.

Trip Generation Rates

TABLE 4.14-3

PROJECT TRIP GENERATION RATES Average Daily Traffic

Category	Unit	Daily Trip Rate/ Unit	PM Peak Hour Trip Rate/ Unit	PM Peak Hour In/Out Split ¹
<u>Residential</u>				
Single ²	DU ⁷	10.1	1.01	63/37
Multi family ³	DU	6.0	0.53	66/34
<u>Employment</u>				
Retail ⁴	Employee	40.0	3.30	50/50
Service ⁵	Employee	4.3	0.50	16/84
Other ⁶	Employee	3.2	0.47	33/67

¹ PM peak hour in/out split based on *Institute of Transportation Engineers, 5th Edition, 1991*.

² Single family includes low (R/L) and medium (R/M) density units.

³ Multi-family includes medium-high (R/MH) and high (R/H) density units.

⁴ Retail includes community commercial (CC), town center (CMU), general commercial, neighborhood commercial (C/G), and freeway service (C/FS).

⁵ Service includes office commercial (C/O) and utilities (sewer and water treatment areas).

⁶ Other includes limited industrial (I/L), general industrial (I/L), schools and recreation areas.

⁷ DU = Dwelling unit.

Source: San Joaquin County Travel Demand Model, 1991.

Trip Distribution

The future distribution patterns of project traffic on the local and regional road network were determined using the 1991 County Travel Demand Model, which includes San Joaquin County and, at a more general level of detail, Stanislaus County, the nine Bay Area counties, and the Sacramento region. The trip distribution process uses a "gravity" model which assumes that the probability for making a particular trip declines as travel time increases. Separate estimations are made for work trips, shopping trips, school trips, and other trips. This separation accounts for the tendency for people to travel longer distances to go to work than to go to school or shopping areas. The trip distribution assumptions were validated using existing (1990) land uses and traffic volume counts during development of the 1991 Travel Demand Model, and then applied to future conditions.

Some of the trips generated by the project would remain within the project site, and would therefore not impact roads outside the project boundaries. By providing a balance of housing, employment opportunities, and retail uses at each phase of development, the proposed project would be significantly more self-contained than typical large-scale residential developments. The proportion of traffic remaining within the project would be expected to increase over time as retail and employment uses expand.

Work trips typically represent about 25 percent of total daily trips and about 50 percent of peak hour trips. Work trip patterns for the proposed project are of particular concern due to the impacts on Altamont Pass capacity during commute periods. At each phase, the percentage of trips through the Altamont Pass would be higher for work trips than for other types of trips (e.g., shopping, school, and recreation).

Traffic Assignment

The 1991 Travel Demand Model developed for the update of the Revised Draft General Plan 2010 was used to assign project traffic to the road system. Project traffic was assigned in addition to traffic from all other existing and projected 2010 future development in the area covered by the model. The assignment accounts for the fact that travel speeds become slower as congestion increases, and some drivers switch to alternative routes to bypass congestion. The model's assignment process was used for the analysis of the intermediate phases of the project as well as 2010.

To determine the effects of cumulative city and county traffic alone, separate model runs were conducted based on the "No Project" condition, which assumed all growth anticipated under the Revised Draft General Plan 2010, including the other "new towns" but excluding the proposed project. The differences between traffic assignments with and without the project were used to estimate the net volume increase on specific roads and freeways due to the project.

Impact

4.14-1 The Proposed Project Scenario would generate up to 249,000 daily vehicle trips to, from, or within the project site in 2010 assuming current rates of trip-making. The Market-Constraint Scenario would generate up to 177,000 daily vehicle trips to, from, or within the project site in 2010. With either project scenario, the added trips would contribute significantly to projected traffic growth, increases in vehicle miles traveled, and LOS deficiencies on the road system, particularly in the vicinity of the site. Some of these impacts would be unavoidable and significant. Specific facilities and locations of these impacts are described in subsequent impacts.

The project's trip generation was estimated based on the proposed land use plan submitted by the applicant (Figure 3.7). The total trip generation of the project at each analysis phase (1995, 2000, 2005, and 2010) was computed using the rates shown in Table 4.14-3. The resulting trip generation estimates for each phase of the Proposed Project Scenario and the Market-Constraint Scenario are shown in Tables 4.14-4 through 4.14-8.

Proposed Project Scenario

The proposed project assumes 100 percent employment buildout by 2010. Initially, the project would generate about 105,500 trip ends, which would increase to about 236,700 trip ends by 2000, 370,500 trip ends by 2005, and 450,300 trip ends by 2010 (Table 4.14-4). The peak hour traffic generated under the Proposed

Project Scenario would increase from about 9,700 trip ends in 1995 to 42,200 in 2010⁹ (Table 4.14-4).

TABLE 4.14-4

**MOUNTAIN HOUSE TRIP END GENERATION
(1995-2010)¹**

	1995	2000	2005	2010
Proposed Project Scenario				
Average daily trip ends	105,500	236,700	370,500	450,300
PM peak hour trip ends	9,740	21,990	34,530	42,220
Market-Constraint Scenario				
Average daily trip ends	35,600	97,100	170,100	244,100
PM peak hour trip ends	3,410	9,420	16,610	24,000

¹ See Tables 4.14-8 5 through 4.14-11 8 for detailed information on each phase of development.

Under the Proposed Project Scenario, about 70 percent of the total trips generated by the project would remain internal to the project site by 2010. The rate of internal travel is comparable to the City of Tracy, which, based on the 1991 Travel Demand Model, has a current internal travel rate of 70 percent. As the project's buildout population would be about the same as the City of Tracy's current population, it is reasonable to expect a similar rate of internal travel. The rate of internal travel would vary depending on the type of trip. Work trips would be about **45 to 50 percent internal**, with a near even split between work trips remaining within the project boundaries and those leaving the site. ~~School and Shopping~~ trips would be nearly ~~100~~ **90 percent internal, and school trips would also be largely internal.**

For the Proposed Project Scenario, the percentage of total daily trips through the Altamont Pass would range from about 13 percent in 1995 to about 11 percent in 2010, while about 71 to 75 percent of the total daily trips would remain within the project site (Table 4.14-9). About one-third (29 to 35 percent) of work trips would be through the Altamont Pass at each stage of project development (Table 4.14-10).

Market-Constraint Scenario Trip Generation

The Market-Constraint Scenario would be expected to generate about 35,600 daily vehicle trip ends in 1995 increasing to about 244,000 vehicle trip ends by 2010 (Table 4.14-4). The peak hour traffic generated would be about 10 percent of the daily total, increasing from about 3,400 trip ends in 1995 to 24,000 trip ends by 2010 (Table 4.14-4).

⁹ The number of project-generated trips (i.e., trips to, from, or within the site) would be substantially lower than the number of trip ends, which include both the origin and destination of trips remaining within the project boundaries. By 2010, these internal trips would account for over two-thirds of the total trip ends.

TABLE 4.14-5

PHASE I (1995)
MOUNTAIN HOUSE TRIP END GENERATION

Land Use	Amount		Daily Trip Ends	PM Peak Hour Trip Ends
Proposed Project Scenario				
<u>Residential</u>				
Single family	1,599	DU	16,100	1,610
Multi family	0	DU	0	0
Subtotal	1,599	DU	16,100	1,610
<u>Non-Residential</u>				
Retail	1,653	Employees	66,100	5,450
Service	1,026	Employees	4,400	510
Other	1,909	Employees	6,100	900
Subtotal	4,588	Employees	76,600	6,860
Total			92,700	8,470
Market-Constraint Scenario				
<u>Residential</u>				
Single family	1,599	DU	16,100	1,610
Multi family	0	DU	0	0
Subtotal	1,599	DU	16,100	1,610
<u>Non-Residential</u>				
Retail	442	Employees	17,700	1,460
Service	242	Employees	1,000	120
Other	261	Employees	800	120
Subtotal	945	Employees	19,500	1,700
Total			35,600	3,310

Source: Land use based on sponsor's development plan and phasing assumptions (**see Chapter 3**), except that phasing of housing has been slightly modified by County staff. Daily trip generation based on 1991 San Joaquin County travel demand model. Peak hour trip generation based on peak hour trip generation rates in the Institute of Traffic Engineers' *Trip Generation, 5th Ed.*, 1991.

TABLE 4.14-6

PHASE II (2000)
MOUNTAIN HOUSE TRIP END GENERATION

Land Use	Amount		Daily Trip Ends	PM Peak Hour Trip Ends
Proposed Project Scenario				
<u>Residential</u>				
Single family	4,934	DU	49,800	4,980
Multi family	1,337	DU	8,000	710
Subtotal	6,271	DU	57,800	5,690
<u>Non-Residential</u>				
Retail	3,522	Employees	140,900	11,620
Service	1,994	Employees	8,600	1,000
Other	4,962	Employees	15,900	2,330
Subtotal	10,478	Employees	165,400	14,950
Total			223,200	20,910
Market-Constraint Scenario				
<u>Residential</u>				
Single family	4,934	DU	49,800	4,980
Multi family	1,337	DU	8,000	710
Subtotal	6,271	DU	57,800	5,690
<u>Non-Residential</u>				
Retail	790	Employees	31,600	2,610
Service	803	Employees	3,500	400
Other	1,324	Employees	4,200	620
Subtotal	2,917	Employees	39,300	3,630
Total			97,100	9,320

Source: Land use based on sponsor's development plan and phasing assumptions (**see Chapter 3**), except that phasing of housing has been slightly modified by County staff. Daily trip generation based on 1991 San Joaquin County travel demand model. Peak hour trip generation based on peak hour trip generation rates in the Institute of Traffic Engineers' *Trip Generation, 5th Ed.*, 1991.

TABLE 4.14-7

PHASE III (2005)
MOUNTAIN HOUSE TRIP END GENERATION

Land Use	Amount		Daily Trip Ends	PM Peak Hour Trip Ends
Proposed Project Scenario				
<u>Residential</u>				
Single family	9,400	DU	94,900	9,490
Multi family	2,166	DU	13,000	1,150
Subtotal	11,566	DU	107,900	10,640
<u>Non-Residential</u>				
Retail	5,433	Employees	217,300	17,930
Service	3,005	Employees	12,900	1,500
Other	8,178	Employees	26,200	3,840
Subtotal	16,616	Employees	256,400	23,270
Total			364,300	33,910
Market-Constraint Scenario				
<u>Residential</u>				
Single family	9,400	DU	94,900	9,490
Multi family	2,166	DU	13,000	1,150
Subtotal	11,566	DU	107,900	10,640
<u>Non-Residential</u>				
Retail	1,209	Employees	48,400	3,990
Service	1,158	Employees	5,000	580
Other	2,765	Employees	8,800	1,300
Subtotal	5,132	Employees	62,200	5,870
Total			170,100	16,510

Source: Land use based on sponsor's development plan and phasing assumptions (**see Chapter 3**), except that phasing of housing has been slightly modified by County staff. Daily trip generation based on 1991 San Joaquin County travel demand model. Peak hour trip generation based on peak hour trip generation rates in the Institute of Traffic Engineers' *Trip Generation, 5th Ed.*, 1991.

TABLE 4.14-8

PHASE IV (2010)
MOUNTAIN HOUSE TRIP END GENERATION

Land Use	Amount		Daily Trip Ends	PM Peak Hour Trip Ends
Proposed Project Scenario				
<u>Residential</u>				
Single family	13,369	DU	135,000	13,500
Multi family	2,634	DU	15,800	1,400
Subtotal	16,003	DU	150,800	14,900
<u>Non-Residential</u>				
Retail	6,321	Employees	252,800	20,860
Service	3,005	Employees	12,900	1,500
Other	10,554	Employees	33,800	4,960
Subtotal	19,880	Employees	299,500	27,320
Total			450,300	42,220
Market-Constraint Scenario				
<u>Residential</u>				
Single family	13,369	DU	135,000	13,500
Multi family	2,634	DU	15,800	1,400
Subtotal	16,003	DU	150,800	14,900
<u>Non-Residential</u>				
Retail	1,736	Employees	69,400	5,730
Service	1,764	Employees	7,600	880
Other	5,083	Employees	16,300	2,390
Subtotal	8,583	Employees	93,300	9,000
Total			244,100	23,900

Source: Land use based on sponsor's development plan and phasing assumptions (**see Chapter 3**), except that phasing of housing has been slightly modified by County staff. Daily trip generation based on 1991 San Joaquin County travel demand model. Peak hour trip generation based on peak hour trip generation rates in the Institute of Traffic Engineers' *Trip Generation, 5th Ed.*, 1991.

4.14 TRANSPORTATION

TABLE 4.14-9

**PROJECTED DISTRIBUTION OF
TOTAL DAILY TRIPS (1995-2010)**
(percent)

Destination	1995	2000	2005	2010
Proposed Project Scenario				
Mountain House	71	75	75	72
Tracy	11	9	10	11
Stockton	2	2	2	2
Other San Joaquin County	2	2	2	2
Sacramento area	0	0	0	1
Contra Costa County ¹	3	2	2	2
Alameda County ¹	8	7	7	7
Other Bay Area ¹	2	2	1	2
Stanislaus County	1	1	1	1
TOTALS	100	100	100	100
Market-Constraint Scenario				
Mountain House	48	50	49	51
Tracy	19	20	21	21
Stockton	3	3	3	3
Other San Joaquin County	4	4	4	4
Sacramento area	1	1	1	1
Contra Costa County ¹	4	4	4	4
Alameda County ¹	15	13	13	12
Other Bay Area ¹	4	3	3	3
Stanislaus County	2	2	2	1
TOTALS	100	100	100	100

¹ Destinations west of project site through Altamont Pass.

Note: Table shows percent of ~~all trips originating in total~~ **daily Mountain House trip productions** destined for area indicated. For example, in 1995 an estimated 11 percent of all trips ~~from produced in Mountain House~~ **for the Proposed Project Scenario** would ~~have destinations in~~ **be attracted to** the City of Tracy Planning Area.

TABLE 4.14-10

**PROJECTED DISTRIBUTION OF
DAILY WORK TRIPS (1995-2010)**
(percent)

Destination	1995	2000	2005	2010
Proposed Project Scenario				
Mountain House	45	51	50	45
Tracy	10	10	11	12
Stockton	4	4	4	4
Other San Joaquin County	3	3	4	4
Sacramento area	1	1	1	1
Contra Costa County ¹	6	6	5	6
Alameda County ¹	23	19	19	21
Other Bay Area ¹	6	5	5	5
Stanislaus County	2	1	1	2
TOTAL	100	100	100	100
Market-Constraint Scenario				
Mountain House	12	19	21	24
Tracy	15	15	15	16
Stockton	7	7	6	6
Other San Joaquin County	6	6	6	6
Sacramento area	1	1	2	2
Contra Costa County ¹	10	9	9	8
Alameda County ¹	36	31	30	28
Other Bay Area ¹	10	9	9	8
Stanislaus County	3	3	2	2
TOTAL	100	100	100	100

¹ Destination west of project site through Altamont Pass.

Note: Table shows percent of ~~work trips originating in total~~ **daily Mountain House destined for work trip productions attracted to the** area indicated. For example, in 1995 an estimated 6 percent of ~~all work trips from produced in Mountain House residences would have destinations in~~ **for the Proposed Project Scenario would be attracted to** Contra Costa County.

With the Market-Constraint Scenario, ~~the degree of internal travel would be about 50 percent, or 20 percent less than the proposed Project Scenario, primarily as a result of a greater export of work trips of all trips produced at Mountain House~~ would be internal, as compared to 70 percent for the Proposed Project Scenario. The lower percentage of internal trips is largely due to fewer employees and retail activities on-site under the Market-Constraint Scenario. About twice as many the percentage of residents would be employed within the site under the Proposed Project Scenario by 2010 than under the Market-Constraint Scenario (Table 4.14-11).

The Market-Constraint Scenario, with substantially less on-site employment, would result in a greater share of daily work trips through the Altamont Pass (ranging from 44 to 56 percent). About half of the total daily trips (including work trips) would remain within the project site at each phase of the project (Table 4.14-9) and trips across Altamont Pass would range from 19 to 23 percent of the total trip volume. **For daily work trips, about 12 to 24 percent would remain within the project site, compared to 45 to 51 percent for the proposed project (Table 4.14-10).**

TABLE 4.14-11

**INTERNAL WORK-RELATED
TRAFFIC CHARACTERISTICS**
Average Daily Traffic

	1995 (%)	2000 (%)	2005 (%)	2010 (%)
Proposed Project Scenario				
Residents employed in project	45	51	50	45
Market-Constraint Scenario				
Residents employed in project	11	19	21	24

Source: DKS Associates, 1991. Residents employed within project estimated as home-based work internal trips divided by home-based work productions.

Mitigation Measures

- 4.14-1(a) *The County should prepare and implement a countywide Transportation Systems Management (TSM) program to promote and facilitate use of alternative modes to the single-occupant vehicle within the County. The program should include measures such as continuation and expansion of the County rideshare program, transportation coordinators at employment sites, provision of park-and-ride lots throughout the County, and development of a network of high occupancy vehicle (HOV) lanes.*
- 4.14-1(b) *The County should prepare and adopt a countywide Trip Reduction Ordinance (TRO) as part of the County's Development Title. The TRO would require major employers in the County, including those within the proposed project, to reduce their peak-hour auto trips through site-specific ridesharing and transit programs and through staggered or flexible work hours programs. The TRO should also set forth specific goals for traffic reduction and require employers to survey their employees each year to monitor the progress of vehicle trip reduction measures.*
- 4.14-1(c) *The project sponsor should establish a Transportation Management Organization (TMO) to carry out requirements of the countywide TRO within the project. The TMO should*

*establish and implement a site-specific Travel Demand Management (TDM) plan, including ongoing funding and monitoring and inclusion of TDM elements in lease agreements. **The plan should, at a minimum, meet requirements of the County's Congestion Management Plan.***

- 4.14-1(d) *The project sponsor should provide on-site facilities and amenities to promote and facilitate use of alternatives to the single-occupant vehicle for longer trips to and from the project site. These facilities should include:*

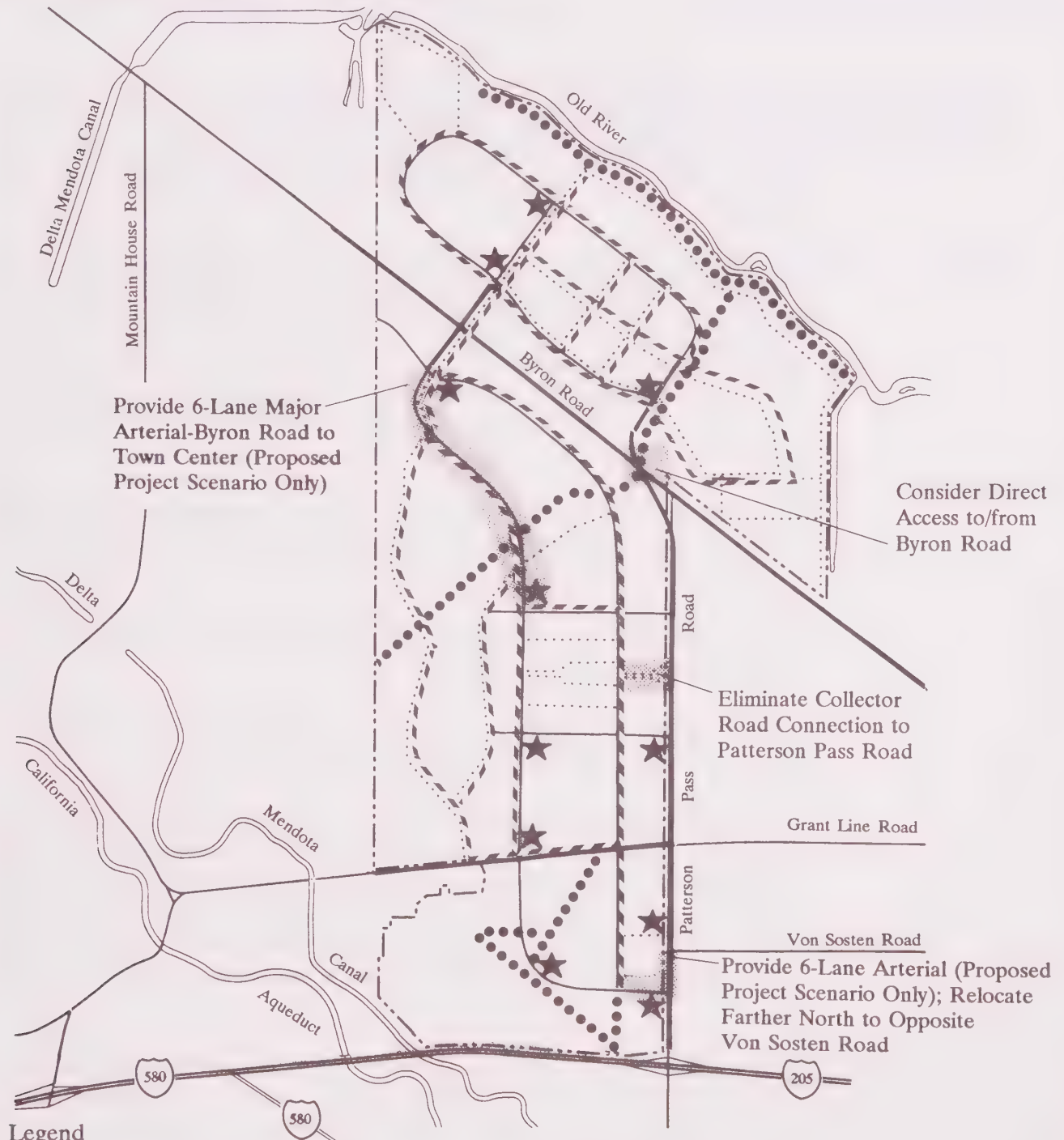
- Provision of numerous park-and-ride lots at appropriate locations within the project (12 sites have been identified by the project sponsor, as shown in Figure 4.14-5). Site design should include bus loading areas and transit rider safety and comfort amenities (e.g., sheltered benches, lighting, bus schedules, transit information numbers, and waste receptacles).
- Provision of a bus transit center in the town center area (see Figure 3.7). The transit center should provide comprehensive transit information, including information such as route maps; service frequencies of local transit service over the course of the day; maps, schedules, and phone numbers concerning connections to regional transit providers (e.g., BART, AC Transit, Contra Costa County Transit Agency) and shuttle service to and from employment centers; and information about disabled access provisions on transit lines servicing the center.
- Promotion, with State and County assistance, of lanes for priority HOV access to/from the project site (e.g., HOV bypass lane at metered on-ramps to I-580 at Grant Line Road and I-205 at Patterson Pass Road).
- Provision of bus pullouts and shelters along potential bus routes within the project site. Bus schedules should be posted at all bus stops.
- Provision of bicycle and pedestrian networks to link residential areas with park-and-ride lots and secured bicycle storage should be provided at these locations.
- ~~Setting aside of land within the project site for a future multi-modal station transfer site in anticipation of future commuter bus and passenger rail service between San Joaquin County and the Bay Area via the Altamont Pass. A study is anticipated to be conducted by the County in the near future to evaluate feasibility and options for commuter rail service in this corridor. As an interim project, the multi-modal site could be used for bus park-and-ride service. This facility could be an expansion of the initial bus transit center in the town center area.~~

4.14-1(e) *The project sponsor, through the TMO, should ensure an adequate level of external, commute-oriented transit service for the project residents and workers. Transit service (fixed route or dial-a-ride) that provides connections to the nearest urban areas or transit hub should be provided from the outset of housing occupancy, as required by policy of the Draft San Joaquin County Congestion Management Program.¹⁰ Later phases should include commuter express bus service between the project site and major employment sites in San Joaquin County and Alameda*

¹⁰ Proposition 111, passed in June 1990, established requirements for each county develop and update annually a Congestion Management Program (CMP). The intent of the CMP is to address transportation needs through coordinated and comprehensive approaches.

ON-SITE CIRCULATION PLAN AND RECOMMENDED CHANGES

Figure 4.14-5



Legend

- Major Arterial Road
(4 to 6 Lanes, 110 Feet - 136 Feet R/W)
- Minor Arterial Road
(4 Lanes, 84 Feet - 110 Feet R/W)
- Collector Road
(2 Lanes, 60 Feet R/W)
- - - - Class II Bike Lane or
Class III Bike Route
(For Commuting by Bike)

- Class I Bike Path and
Pedestrian Path
(Recreation Use)
- ★ Transit Stop/Park
and Ride Lot
- Problem Spots/
Recommended Changes
- - - - Project Site
Boundary



Source: DKS Associates and Trimark, 1990.

BASELINE

County such as Tracy, Manteca, San Ramon, Pleasanton, and Livermore. The TMO should coordinate all transit service for the project with the County to promote development of a coordinated countywide service plan. The TMO should also disseminate information on transit routes and schedules at locations throughout the community. The project sponsor, **through the TMO**, should provide fair-share funding of these transit services. Fair-share funding would vary depending on the type of service. For example, funding could be split equally between major employers and the project sponsor, who would provide a substantial number of workers for regional employment centers. **The sponsor should underwrite the transit operating costs until such time that an agreement is made between a countywide transit agency and the TMO to fund and operate the transit services.** The sponsor should be responsible for funding transit connections between future regional transit service endpoints (e.g., BART in Livermore or East Dublin) and the project site where and when warranted by commute demand.

- 4.14-1(f) *Local transit service should be provided within the project site with frequent service intervals during peak periods to facilitate non-vehicle travel on internal roads. Stops should provide amenities including covered seating and scheduled stop times and frequency of service over the course of the day.*
- 4.14-1(g) *The project sponsor should develop a traffic and land use occupancy monitoring program. The monitoring program would serve as a means of comparing the actual development of the project to the original phasing schedule, and would allow improvements to be tailored to actual project development. Monitoring would also provide the County with a means of assessing the degree to which the sponsor's commitment to ridesharing and transit usage is successful. **It is also critical for State highway impact monitoring.** Monitoring should be conducted once every year. Land use occupancy information should include specific land use type (e.g. medical office, neighborhood shopping center, low-density apartment); quantity (e.g. number of units, square footage); location; and total number of employees. Traffic monitoring should include a minimum of three weekday 24-hour traffic counts broken into 15-minute increments on all roads connecting the project site to surrounding County roads. The traffic and land use monitoring program should be the responsibility of the on-site TSM coordinator.*
- 4.14-1(h) *Design guidelines for residential and commercial development within the project should be established to facilitate safe and convenient pedestrian access to transit stops. Transit stops should be located within convenient walking distance (one-quarter mile or less) of employment and commercial areas within the site. Such guidelines should be included as part of the Specific Plan.*
- 4.14-1(i) *Local-serving commercial uses throughout the project site should be provided to facilitate walk trips for local shopping. Local retail facilities are not sufficiently dispersed throughout the site, as currently proposed, to allow walk access by a majority of residents. By providing a larger number of small local commercial sites, the same total local-serving commercial area could be*

provided but the accessibility via non-automobile travel could be substantially increased. Additional commercial uses should be identified at the time of the Specific Plan.

- 4.14-1(j)** San Joaquin County, with the participation of Alameda County and others, is undertaking the Altamont Pass Rail Corridor Study in early 1992. This study will evaluate feasibility and options for operating commuter rail or other transit service in the corridor between Stockton and the Bay Area. Should passenger rail service on either the UP or SP tracks be determined to be feasible and sufficient patronage be identified to warrant a station near the project site, the project sponsor should contribute a fair share toward a rail station to serve the project and should fund feeder bus service to the station.
- 4.14-1(k)** The overall size of the project could be downscaled to reduce traffic generation of the project and associated adverse impacts on the transportation system. It should be noted, however, that reducing the size of the project would not mitigate all adverse regional traffic impacts since, on many regional facilities, cumulative traffic levels without the project (as indicated for the No Project Scenario) are projected to exceed capacities.

Impact


- 4.14-2** The project would increase 2010 traffic volumes on study area freeway segments by 3 to 18 percent over cumulative levels projected without the project, resulting in deficient Levels of Service at a number of locations along I-580 and I-205.

The project, under both the Proposed Project and Market-Constraint scenarios, would add significant volumes to regional freeways (Figures 4.14-6A, 4.14-6B, 4.14-7A, and 4.14-7B, and Tables 4.14-12A and 4.14-12B). Future freeway volumes are identified in the figures and tables for an area up to 10 miles from the project site (the current revision of the Draft General Plan 2010 will assess future freeway volumes beyond this 10-mile range).

The two project scenarios differ substantially regarding where and how much additional freeway traffic would be generated (Figures 4.14-6A and 4.14-6B). The highest increase in freeway volumes under the Proposed Project Scenario, which would have a higher concentration of jobs within the project site than the Market-Constraint Scenario, would occur east of the project site on I-205. This increase would be due to the strong interaction between the jobs in Mountain House and the labor pool in the City of Tracy. Projected 2010 freeway volumes actually show a decrease in some locations with the Proposed Project Scenario compared to cumulative growth without the project. This decrease is attributable to the shifts in regional job distribution that would accompany implementation of the proposed project.

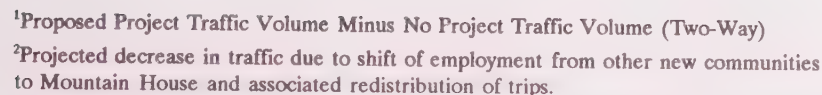
4.14-28

Approximate



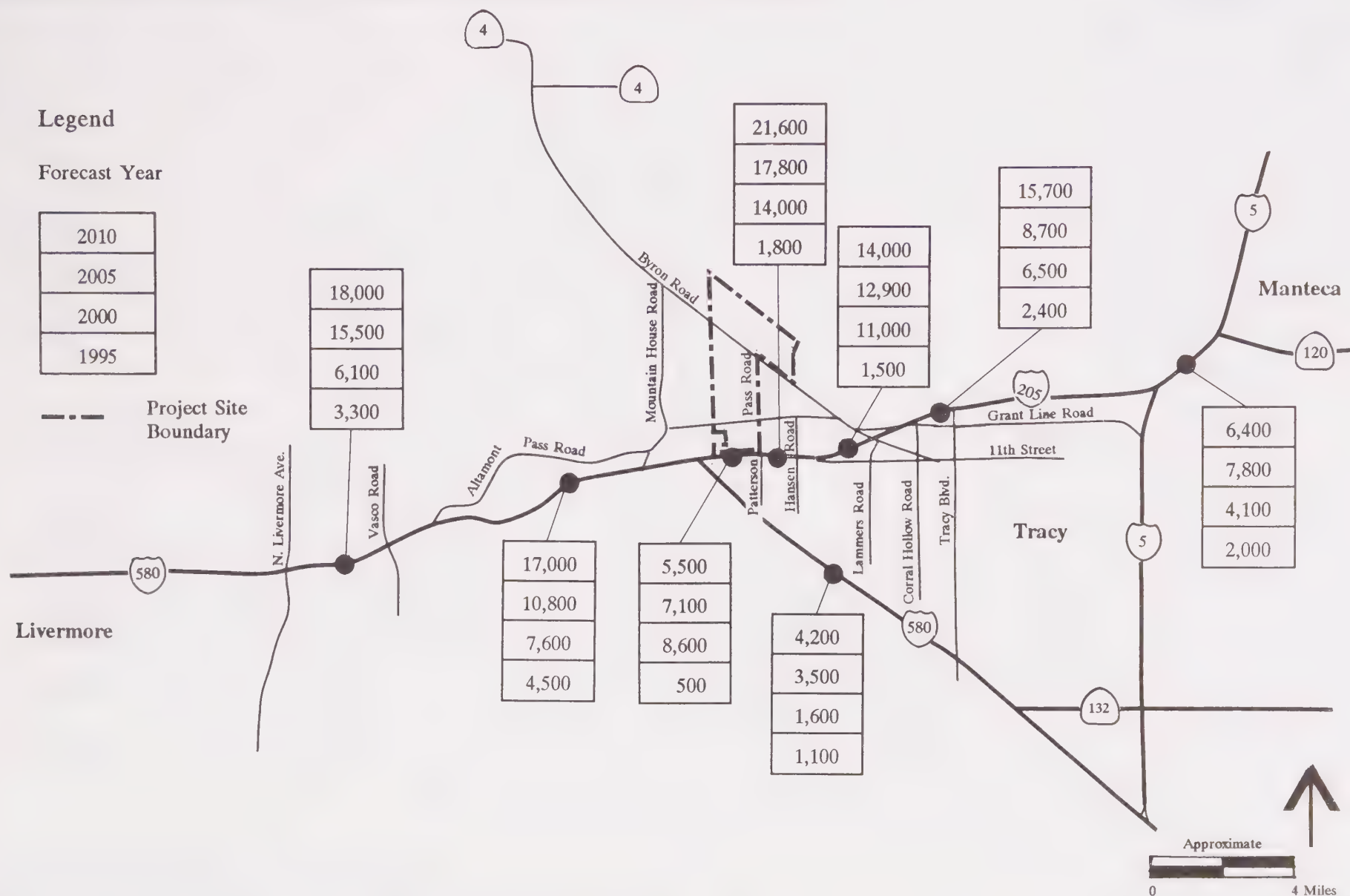
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BASELINE



PROJECTED INCREASE IN DAILY TRAFFIC ON FREEWAYS: ¹ MARKET-CONSTRAINT SCENARIO COMPARED TO NO PROJECT

Figure 4.14-6B



¹Market Constraint Traffic Volume Minus No Project Traffic Volume (Two-Way).

TOTAL DAILY TRAFFIC VOLUMES ON FREEWAYS PROPOSED PROJECT SCENARIO¹

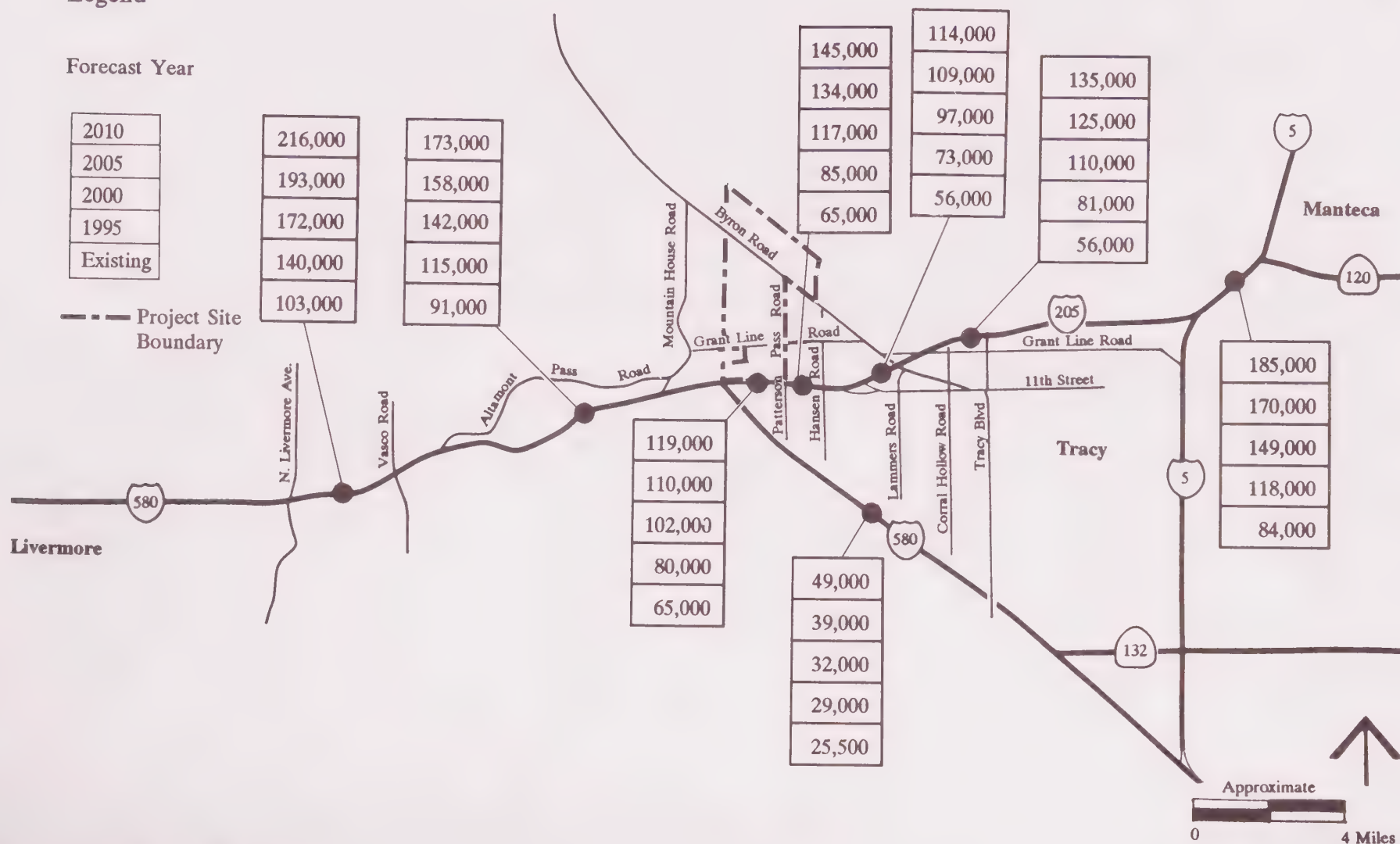
Figure 4.14-7A

Legend

Forecast Year

2010
2005
2000
1995
Existing

--- Project Site Boundary



¹Total of both directions. See Table 4.14-13(A)

TOTAL DAILY TRAFFIC VOLUMES ON FREEWAYS
MARKET CONSTRAINT SCENARIO¹

Figure 4.14-7B

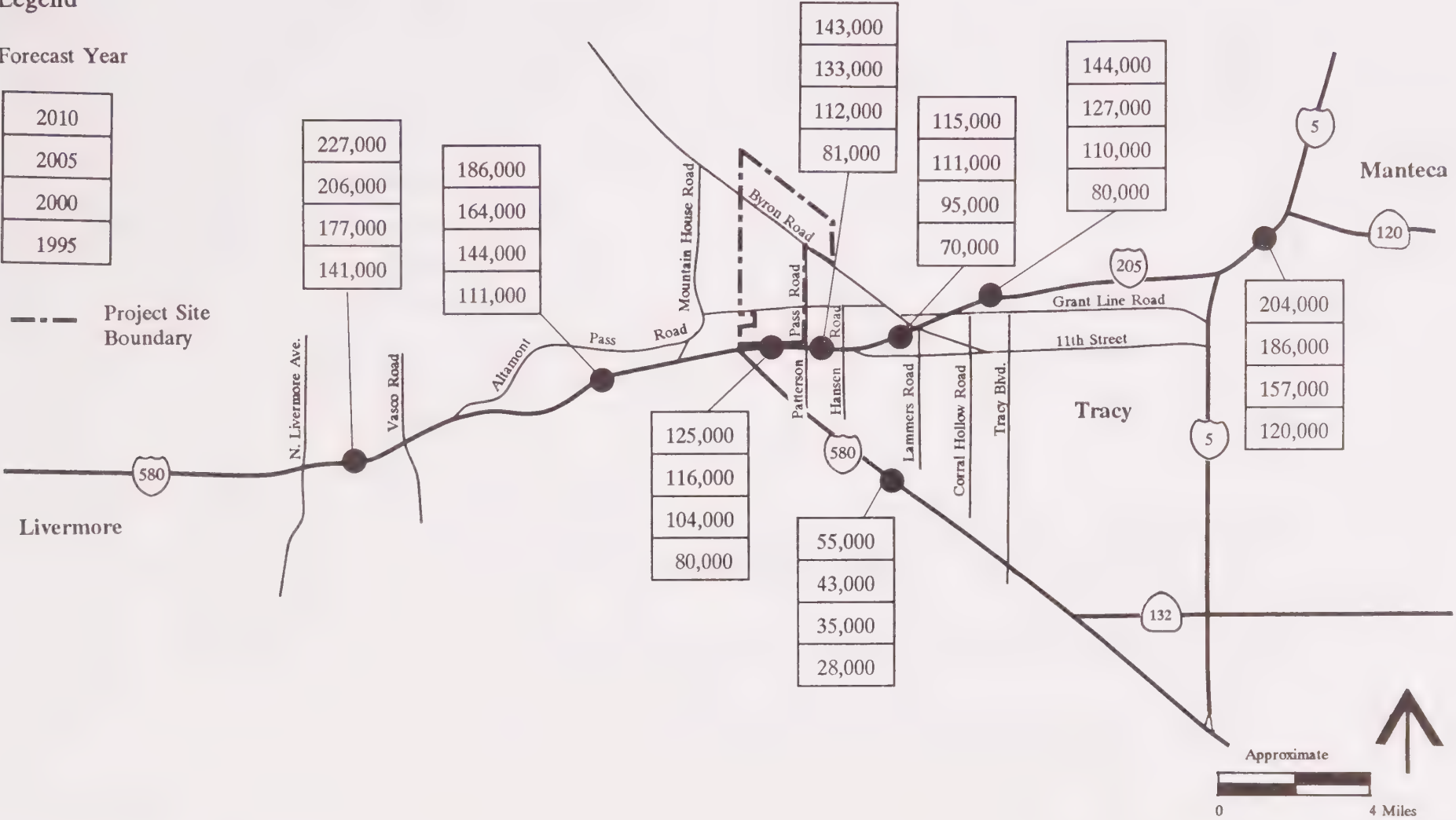
Legend

Forecast Year

2010
2005
2000
1995

--- Project Site Boundary

4.14-31



¹Total of both directions. See Table 4.14-13(B)

TABLE 4.14-12A

TOTAL DAILY TRAFFIC VOLUME CHANGES ON FREEWAYS IN PROJECT VICINITY
(Cumulative Growth with and without the Proposed Project Scenario)

Freeway	Location	Existing Daily Traffic Volume	2010 Daily Traffic Volume			Percent Change ¹
			Without No Project	With Project	Volume Change Difference ¹	
I-580	In Livermore between Vasco Road and North Livermore Avenue	103,000	209,000	216,400	7,400	3.5
I-580	At the Altamont Pass	91,000	168,500	173,400	4,900	2.9
I-580	Between I-205 and the Grant Line Road interchange	90,000	172,500	164,400	(8,100)	(4.7)
I-580	South of Patterson Pass Road	25,500	50,300	48,700	(1,600)	(3.2)
I-205	West of Patterson Pass Road	65,000	119,700	118,800	(900)	(0.8)
I-205	East of Patterson Pass Road	65,000	120,900	144,600	23,700	19.6
I-205	East of 11th Street	56,000	101,400	113,800	12,400	12.2
I-205	East of Grant Line Road	56,000	128,500	134,600	6,100	4.7
I-5	Between I-205 and SR 120	84,000	197,200	184,800	(12,400)	(6.3)

¹ Compared to "No Project" volume. Volumes in parentheses indicate segments where a decrease in traffic would be expected due to project's effects on regional job location and commuting patterns.

Source: DKS Associates.

TABLE 4.14-12B

TOTAL DAILY TRAFFIC VOLUME INCREASES ON FREEWAYS IN PROJECT VICINITY
(Cumulative Growth with and without the Market-Constraint Scenario)

Freeway	Location	Existing Daily Traffic Volume	2010 Daily Traffic Volume			
			Without No Project	With Project	Volume Increase Difference ¹	Percent Increase Change ¹
I-580	In Livermore between Vasco Road and North Livermore Avenue	103,000	209,000	227,000	18,000	8.6
I-580	At the Altamont Pass	91,000	168,500	185,500	17,000	10.0
I-580	Between I-205 and the Grant Line Road interchange	90,000	172,500	178,000	5,500	3.2
I-580	South of Patterson Pass Road	25,500	50,300	54,500	4,200	8.3
I-205	West of Patterson Pass Road	65,000	119,700	125,200	5,500	4.6
I-205	East of Patterson Pass Road	65,000	120,900	142,500	21,600	17.9
I-205	East of 11th Street	56,000	101,400	115,400	14,000	13.8
I-205	East of Grant Line Road	56,000	128,500	144,200	15,700	12.2
I-5	Between I-205 and SR 120	84,000	197,200	203,600	6,400	3.2

¹ Compared to "No Project" volume.

Source: DKS Associates.

the Market-Constraint Scenario. The ability of the site to intercept workers otherwise bound for jobs in the Tri-Valley area would be reduced with the Market-Constraint Scenario.

According to the proposed phasing plan, development of employment and housing would proceed almost in balance throughout the life of the project. The amount of project traffic added to the critical Altamont Pass section of I-580 would increase steadily over time as the overall magnitude of the project increases, and the greatest impacts to freeway sections either east or west of the site would occur by 2010 (Figure 4.14-6A and Tables 4.14-13A, B, and C).

The feasibility of constructing two truck-climbing lanes in each direction over the Altamont Pass segment of I-580 is currently being studied by Caltrans District 4 as part of the Inter-regional Route System 10-year plan (Dickson, 1991). Even with truck-climbing lanes, this section of I-580 is projected to operate at LOS F by 2010 during the P.M. peak period with the addition of cumulative growth and either project scenario. LOS F operation over the Altamont Pass would also occur by 2010 with no development of the project site.

Widening I-205 to six lanes is the highest-ranked project in the current Regional Transportation ~~Plan~~ **Improvement Program** (San Joaquin County Council of Governments, 1991). The Revised Draft General Plan 2010 (San Joaquin County, 1991a) projects a need for eight lanes by 2005, as well as improvements at the I-5, I-205, and SR 120 junction. Capacity improvements and an intensive effort to reduce single-occupant vehicle trips generated by the proposed project and other cumulative development would be needed to address future congestion on I-580 through the Altamont Pass area. The project sponsor describes a detailed program of Transportation System Management (TSM) and Transportation Demand Management (TDM) which would help to reduce single-occupant vehicle trips within the project site and between the project and external destinations (Trimark, 1990).

The project site is well-situated to encourage High Occupancy Vehicle (HOV) usage through short HOV lanes connecting the site to I-205 via Patterson Pass Road and to I-580 via Grant Line Road combined with ramp metering lights at the intersections of I-205 with Patterson Pass Road and I-580 with Grant Line Road. The project sponsor proposes to promote HOV use through a Transportation Management Organization (TMO) which would focus on home-end trips as well as the more conventional focus on work-end trips. The home-end strategy would include carpool/vanpool matching service, continued promotion of ridesharing, and distribution of transit and HOV facility information to home buyers.

The sponsor's work-end TDM strategy would include providing ridesharing matching services for all employees, and active involvement by the project sponsor's TMO in promoting TDM programs by individual employers within the project site. The project sponsor's TMO would promote a broad transportation demand program, which would include transit pass subsidies, ridesharing, flexible working hours, and telecommuting.

Tables 4.14-13A, B, and C summarize the analysis of future freeway conditions in the project vicinity. The analysis reflects the expectation of lower peak hour percentages and more balanced directional splits in future

TABLE 4.14-13A

SUMMARY OF PROJECTED FREEWAY VOLUMES AND LEVELS OF SERVICE, PROPOSED PROJECT SCENARIO
(Cumulative Growth with Proposed Project Scenario)

Link	Two-Way 1990 ADT ¹	Two-Way Future ADT ¹	Total Lanes		Two-Way PM Peak	PM Peak Direction Split ²		V/C ³	LOS ⁴	V/C with TDM ⁵	LOS	V/C with TDM and Two Added Lanes	LOS	Notes
			Exist- ing	As- sumed		East- bound	West- bound							
Phase 1: 1995 (Peak Hour Percent of ADT = 10)														
I-580 west of Vasco Rd.	103,000	140,000	8	8	14,000	60%	40%	1.05	F	1.00	E ⁶			
I-580 at Altamont Pass	91,000	115,000	8	8	11,500	60%	40%	0.86	D	0.82	D			
I-580 south of Patterson Pass Rd.	25,500	29,000	4	4	2,900	55%	45%	0.40	A	0.38	A			
I-205 west of Patterson Pass Rd.	65,000	80,000	4	4	8,000	60%	40%	1.20	F	1.14	F	0.76	C	(Six lanes total)
I-205 west of Hansen Rd.	65,000	85,000	4	4	8,500	60%	40%	1.28	F	1.21	F	0.81	D	(Six lanes total)
I-205 south of Grant Line Rd.	56,000	73,000	4	4	7,300	60%	40%	1.10	F	1.04	F	0.69	C	(Six lanes total)
I-205 west of Tracy Blvd.	56,000	81,000	4	4	8,100	55%	45%	1.11	F	1.06	F	0.71	C	(Six lanes total)
I-5 south of Route 120	84,000	118,000	8	8	11,800	55%	45%	0.81	D	0.77	D			
Phase 2: 2000 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	172,000	8	8	16,300	60%	40%	1.22	F	1.16	F ⁶			
I-580 at Altamont Pass	91,000	142,000	8	8	13,500	60%	40%	1.01	F	0.96	E	0.86	D	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	32,000	4	4	3,000	60%	40%	0.45	A	0.43	A			
I-205 west of Patterson Pass Rd.	65,000	102,000	4	6	9,700	60%	40%	0.97	E	0.92	D			
I-205 west of Hansen Rd.	65,000	117,000	4	6	11,100	60%	40%	1.11	F	1.05	F	0.79	D	(Eight lanes total)
I-205 south of Grant Line Rd.	56,000	97,000	4	6	9,200	60%	40%	0.92	D	0.87	D			
I-205 west of Tracy Blvd.	56,000	110,000	4	6	10,500	60%	40%	1.05	F	1.00	E	0.75	C	(Eight lanes total)
I-5 south of Route 120	84,000	149,000	8	10	14,200	55%	45%	0.78	D	0.74	C			
Phase 3: 2005 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	193,000	8	8	18,300	60%	40%	1.37	F	1.30	F ⁶			
I-580 at Altamont Pass	91,000	158,000	8	8	14,400	60%	40%	1.08	F	1.03	F	0.92	D	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	39,000	4	4	3,700	60%	40%	0.56	B	0.53	B			

Table 4.14-13A - continued

Link	Two-Way 1990 ADT ¹	Two-Way Future ADT ¹	Total Lanes		Two-Way PM Peak	PM Peak Direction Split ²		V/C ³	LOS ⁴	V/C with TDM ⁵	LOS	V/C with TDM and Two Added Lanes	LOS	Notes
			Exist- ing	As- sumed		East- bound	West- bound							
I-205 west of Patterson Pass Rd.	65,000	110,000	4	6	10,500	60%	40%	1.05	F	1.00	E	0.79	D	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	134,000	4	6	12,800	60%	40%	1.28	F	1.22	F	0.96	E ⁶	(Eight lanes total)
I-205 south of Grant Line Rd.	56,000	109,000	4	6	10,300	60%	40%	1.03	F	0.98	E	0.77	D	(Eight lanes total)
I-205 west of Tracy Blvd.	56,000	125,000	4	6	11,900	55%	45%	1.09	F	1.04	F	0.82	D	(Eight lanes total)
I-5 south of Route 120	84,000	170,000	8	10	16,200	55%	45%	0.89	D	0.85	D			
Phase 4: 2010 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	216,000	8	8	20,600	60%	40%	1.55	F	1.47	F ⁶	1.07	F ⁶	(Truck climbing lane) ⁷
I-580 at Altamont Pass	91,000	173,000	8	8	16,500	60%	40%	1.24	F	1.18	F			
I-580 south of Patterson Pass Rd.	25,500	49,000	4	4	4,600	60%	40%	0.69	C	0.66	C			
I-205 west of Patterson Pass Rd.	65,000	119,000	4	6	11,300	60%	40%	1.13	F	1.07	F	0.85	D	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	145,000	4	6	13,700	60%	40%	1.37	F	1.30	F	1.03	F ⁶	(Eight lanes total)
I-205 south Grant Line Rd.	56,000	114,000	4	6	10,800	60%	40%	1.08	F	1.03	F	0.81	D	(Eight lanes total)
I-205 west of Tracy Blvd.	56,000	135,000	4	6	12,800	55%	45%	1.17	F	1.11	F	0.88	D	(Eight lanes total)
I-5 south of Route 120	84,000	185,000	8	10	17,600	55%	45%	0.97	E	0.92	D			

¹ ADT = Average daily traffic volume.

² Directional splits focus on eastbound and westbound directions. However, for roads where vehicles may be northbound or southbound (I-580 south of Patterson Pass Road), the higher percentage refers to southbound vehicles.

³ V/C = Volume-to-capacity ratio.

⁴ LOS = Level of Service based on Draft General Plan 2010.

⁵ TDM = Transportation demand management (carpools, etc.) estimated to reduce peak hour volume by 5 percent.

⁶ Additional lanes are not considered feasible or would require a design exception. The LOS shown represents a potential significant unavoidable impact due to cumulative growth, including the project.

⁷ Assumes one truck climbing lane will be constructed on uphill approach.

Notes: Future ADT from 1991 San Joaquin County Travel Demand Model. Peak hour percentage and directional splits from DKS Associates, based on similar freeway volumes in Bay Area (U.S. 101 in Sonoma County; I-80 in Solano County) as reported in Caltrans' 1990 Volumes on State Highways.

TABLE 4.14-13B

SUMMARY OF PROJECTED FREEWAY VOLUMES AND LEVELS OF SERVICE, MARKET-CONSTRAINT SCENARIO
(Cumulative Growth with Market-Constraint Scenario)

Link	Two-Way 1990 ADT ¹	Two-Way Future ADT ¹	Total Lanes		Two-Way PM Peak	PM Peak Direction Split ²		V/C ³	LOS ⁴	V/C with TDM ⁵	LOS	V/C with TDM and Two Added Lanes	LOS	Notes
			Exist- ing	As- sumed		East- bound	West- bound							
Phase 1: 1995 (Peak Hour Percent of ADT = 10)														
I-580 west of Vasco Rd.	103,000	141,000	8	8	14,100	60%	40%	1.06	F	1.00	F ⁶			
I-580 at Altamont Pass	91,000	111,000	8	8	11,100	60%	40%	0.83	D	0.79	D			
I-580 south of Patterson Pass Rd.	25,500	28,000	4	4	2,800	50%	50%	0.35	B	0.33	A			
I-205 west of Patterson Pass Rd.	65,000	80,000	4	4	8,000	60%	40%	1.20	F	1.14	F	0.76	C	(Six lanes total)
I-205 west of Hansen Rd.	65,000	81,000	4	4	8,100	60%	40%	1.22	F	1.15	F	0.77	C	(Six lanes total)
I-205 south of Grant Line Rd.	56,000	70,000	4	4	7,000	60%	40%	1.05	F	1.00	E	0.67	C	(Six lanes total)
I-205 west of Tracy Blvd.	56,000	80,000	4	4	8,000	55%	45%	1.10	F	1.05	F	0.70	C	(Six lanes total)
I-5 south of Route 120	84,000	120,000	8	8	12,000	55%	45%	0.83	D	0.78	D			
Phase 2: 2000 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	177,000	8	8	16,800	60%	40%	1.26	F	1.20	F ⁶			
I-580 at Altamont Pass	91,000	144,000	8	8	13,700	60%	40%	1.03	F	0.98	E	0.87	D	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	35,000	4	4	3,300	55%	45%	0.45	B	0.43	B			
I-205 west of Patterson Pass Rd.	65,000	104,000	4	6	9,900	65%	35%	1.07	F	1.02	F	0.76	C	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	112,000	4	6	10,600	60%	40%	1.06	F	1.01	F	0.76	C	(Eight lanes total)
I-205 south of Grant Line Rd.	56,000	95,000	4	6	9,000	60%	40%	0.90	D	0.86	D			
I-205 west of Tracy Blvd.	56,000	110,000	4	6	10,500	55%	45%	0.96	E	0.91	D			
I-5 south of Route 120	84,000	157,000	8	10	14,900	55%	45%	0.82	D	0.78	D			
Phase 3: 2005 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	206,000	8	8	19,600	60%	40%	1.47	F	1.40	F ⁶			
I-580 at Altamont Pass	91,000	164,000	8	8	15,600	60%	40%	1.17	F	1.11	F	1.01	F ⁶	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	43,000	4	4	4,100	60%	40%	0.62	C	0.58	C			

Table 4.14-13B - *continued*

Link	Two-Way 1990 ADT ¹	Two-Way Future ADT ¹	Total Lanes		Two-Way PM Peak	PM Peak Direction Split ²		V/C ³	LOS ⁴	V/C with TDM ⁵	LOS	V/C with TDM and Two Added Lanes	LOS	Notes
			Exist- ing	As- sumed		East- bound	West- bound							
I-205 west of Patterson Pass Rd.	65,000	116,000	4	6	11,000	65%	35%	1.19	F	1.13	F	0.85	D	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	133,000	4	6	12,600	60%	40%	1.26	F	1.20	F	0.90	D	(Eight lanes total)
I-205 south of Grant Line Rd.	56,000	111,000	4	6	10,500	55%	40%	0.96	E	0.91	D			
I-205 west of Tracy Blvd.	56,000	127,000	4	6	12,100	55%	45%	1.11	F	1.05	F	0.79	D	(Eight lanes total)
I-5 south of Route 120	84,000	186,000	8	10	17,700	50%	50%	0.89	D	0.84	D			
Phase 4: 2010 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	227,000	8	8	21,600	65%	35%	1.76	F	1.67	F ⁶			
I-580 at Altamont Pass	91,000	186,000	8	8	17,700	65%	35%	1.44	F	1.37	F	1.26	F ⁶	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	55,000	4	4	5,200	55%	45%	0.72	C	0.68	C			
I-205 west of Patterson Pass Rd.	65,000	125,000	4	6	11,900	65%	35%	1.29	F	1.22	F	0.92	D	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	143,000	4	6	13,600	60%	40%	1.36	F	1.29	F	0.97	E ⁶	(Eight lanes total)
I-205 south Grant Line Rd.	56,000	115,000	4	6	10,900	60%	40%	1.09	F	1.04	F	0.78	D	(Eight lanes total)
I-205 west of Tracy Blvd.	56,000	144,000	4	6	13,700	50%	50%	1.14	F	1.08	F	0.81	D	(Eight lanes total)
I-5 south of Route 120	84,000	204,000	8	10	19,400	55%	45%	1.07	F	1.01	F	0.84	D	(Twelve lanes total)

¹ **ADT = Adverage daily traffic volume.**

² Directional splits focus on eastbound and westbound directions. However, for roads where vehicles may be northbound or southbound (I-580 south of Patterson Pass Road), the higher percentage refers to southbound vehicles.

³ V/C = Volume-to-capacity ratio.

⁴ LOS = Level of Service based on Draft General Plan 2010.

⁵ TDM = Transportation demand management (carpools, etc.) estimated to reduce peak hour volume by 5 percent.

⁶ Additional lanes are not ~~considered~~ feasible **or would require a design exception**. The LOS shown represents a **potential** significant unavoidable impact due to cumulative growth, including the project.

⁷ Assumes one truck climbing lane will be constructed on uphill approach.

Notes: Future ADT from 1991 San Joaquin County Travel Demand Model. Peak hour percentage and directional splits from DKS Associates, based on similar freeway volumes in Bay Area (U.S. 101 in Sonoma County; I-80 in Solano County) as reported in Caltrans' *1990 Volumes on State Highways*.

TABLE 4.14-13C

SUMMARY OF PROJECTED FREEWAY VOLUMES AND LEVELS OF SERVICE
(Cumulative Growth without Project)

Link	Two-Way 1990 ADT ¹	Two-Way Future ADT ¹	Total Lanes		Two-Way PM Peak	PM Peak Direction Split ²		V/C ³	LOS ⁴	V/C with TDM ⁵	LOS	V/C with TDM and Two Added Lanes	LOS	Notes
			Exist- ing	As- sumed		East- bound	West- bound							
Phase 1: 1995 (Peak Hour Percent of ADT = 10)														
I-580 west of Vasco Rd.	103,000	138,000	8	8	13,800	60%	40%	1.04	F	0.98	E ⁶			
I-580 at Altamont Pass	91,000	106,000	8	8	10,600	60%	40%	0.79	D	0.76	C			
I-580 south of Patterson Pass Rd.	25,500	27,000	4	4	2,700	60%	40%	0.40	B	0.38	B			
I-205 west of Patterson Pass Rd.	65,000	79,000	4	4	7,900	60%	40%	1.19	F	1.13	F	0.75	C	(Six lanes total)
I-205 west of Hansen Rd.	65,000	79,000	4	4	7,900	60%	40%	1.19	F	1.13	F	0.75	C	(Six lanes total)
I-205 south of Grant Line Rd.	56,000	68,000	4	4	6,800	60%	40%	1.02	F	0.97	E	0.65	C	(Six lanes total)
I-205 west of Tracy Blvd.	56,000	78,000	4	4	7,800	60%	40%	1.17	F	1.11	F	0.74	C	(Six lanes total)
I-5 south of Route 120	84,000	118,000	8	8	11,800	55%	45%	0.81	D	0.77	D			
Phase 2: 2000 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	171,000	8	8	16,200	60%	40%	1.21	F	1.15	F ⁶			
I-580 at Altamont Pass	91,000	137,000	8	8	13,000	60%	40%	0.98	E	0.93	D	0.83	D	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,000	33,000	4	4	3,100	60%	40%	0.46	B	0.44	B			
I-205 west of Patterson Pass Rd.	65,000	96,000	4	6	9,100	60%	40%	0.91	D	0.86	D			
I-205 west of Hansen Rd.	65,000	98,000	4	6	9,300	60%	40%	0.93	D	0.88	D			
I-205 south of Grant Line Rd.	56,000	84,000	4	6	8,000	60%	40%	0.80	D	0.76	C			
I-205 west of Tracy Blvd.	56,000	103,000	4	6	9,800	60%	40%	0.98	E	0.93	E			
I-5 south of Route 120	84,000	153,000	8	10	14,500	55%	45%	0.76	C	0.78	C			
Phase 3: 2005 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	191,000	8	8	18,100	60%	40%	1.36	F	1.29	F ⁶			
I-580 at Altamont Pass	91,000	153,000	8	8	14,500	60%	40%	1.09	F	1.03	F	0.94	E	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	40,000	4	4	3,800	60%	40%	0.57	C	0.54	C			

Table 4.14-13C - continued

Link	Two-Way 1990 ADT ¹	Two-Way Future ADT ¹	Total Lanes		Two-Way PM Peak	PM Peak Direction Split ²		V/C ³	LOS ⁴	V/C with TDM ⁵	LOS	V/C with TDM and Two Added Lanes	LOS	Notes
			Exist- ing	As- sumed		East- bound	West- bound							
I-205 west of Patterson Pass Rd.	65,000	109,000	4	6	10,400	60%	40%	1.04	F	0.99	E	0.74	C	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	115,000	4	6	10,900	60%	40%	1.09	F	1.04	F	0.78	D	(Eight lanes total)
I-205 south of Grant Line Rd.	56,000	98,000	4	6	9,300	60%	40%	0.93	D	0.88	D	0.66	C	(Eight lanes total)
I-205 west of Tracy Blvd.	56,000	118,000	4	6	11,200	60%	40%	1.12	F	1.06	F	0.80	D	(Eight lanes total)
I-5 south of Route 120	84,000	179,000	8	10	17,000	55%	45%	0.94	E	0.89	D			
Phase 4: 2010 (Peak Hour Percent of ADT = 9.5)														
I-580 west of Vasco Rd.	103,000	209,000	8	8	19,900	60%	40%	1.49	F	1.42	F ⁶			
I-580 at Altamont Pass	91,000	169,000	8	8	16,100	60%	40%	1.21	F	1.15	F	1.05	F	(Truck climbing lane) ⁷
I-580 south of Patterson Pass Rd.	25,500	50,000	4	4	4,800	60%	40%	0.72	C	0.68	C			
I-205 west of Patterson Pass Rd.	65,000	120,000	4	6	11,400	60%	40%	1.14	F	1.08	F	0.81	D	(Eight lanes total)
I-205 west of Hansen Rd.	65,000	121,000	4	6	11,500	60%	40%	1.15	F	1.09	F	0.82	D	(Eight lanes total)
I-205 south Grant Line Rd.	56,000	101,000	4	6	9,600	60%	40%	0.96	E	0.91	D	0.68	C	(Eight lanes total)
I-205 west of Tracy Blvd.	56,000	129,000	4	6	12,300	60%	40%	1.23	F	1.17	F	0.88	D	(Eight lanes total)
I-5 south of Route 120	84,000	197,000	8	10	18,700	55%	45%	1.03	F	1.03	F	0.98	E	(Twelve lanes total)

¹ ADT = Average daily traffic volume.

² Directional splits focus on eastbound and westbound directions. However, for roads where vehicles may be northbound or southbound (I-580 south of Patterson Pass Road), the higher percentage refers to southbound vehicles.

³ V/C = Volume-to-capacity ratio.

⁴ LOS = Level of Service based on Draft General Plan 2010.

⁵ TDM = Transportation demand management (carpools, etc.) estimated to reduce peak hour volume by 5 percent.

⁶ Additional lanes are not considered feasible. The LOS shown represents a significant unavoidable impact due to cumulative growth, including the project.

⁷ Assumes one truck climbing lane will be constructed on uphill approach.

Notes: Future ADT from 1991 San Joaquin County Travel Demand Model. Peak hour percentage and directional splits from DKS Associates, based on similar freeway volumes in Bay Area (U.S. 101 in Sonoma County; I-80 in Solano County) as reported in Caltrans' 1990 *Volumes on State Highways*.

years as more employment moves into San Joaquin County and congestion during peak hours increases. The analysis also assumes that countywide TDM efforts would result in a decrease of about five percent in peak hour freeway volumes.

The proposed project would provide an important contribution to this overall decrease, as it would be expected to achieve a higher overall rate of TDM due to location advantages and the implementation of programs proposed by the project sponsor. TDM/TSM efforts typically focus on the work end of employment trips rather than the home end. In addition to typical TDM/TSM measures for the work end, the Mountain House project sponsor proposes to implement a number of programs aimed at the home end, as mentioned above. Emphasizing single-occupant trip reduction on both ends of the work trip would be likely to substantially increase the overall TDM/TSM rate for the project as a whole. With a concerted effort from the project's outset, an overall trip reduction of 10 to 15 percent may be possible, compared to a five percent reduction considered to be feasible on a countywide basis.

Proposed Project Scenario

Project-related freeway impacts would be most significant east of the project site, on I-205 between Patterson Pass Road and 11th Street in Tracy (Figure 4.14-6A). The Proposed Project would add over 23,000 average daily trips to the I-205 freeway east of Patterson Pass Road by the year 2010. Daily traffic due to the project would initially increase by 9,500 daily trips on I-580 at the Altamont Pass west of the project site on I-580. By the year 2010, this increase would drop to about 4,000 added trips, although the total added traffic west of the site, including Altamont Pass Road, would be greater as discussed above (Figure 4.14-6A). Traffic increases west of the Mountain House site would be less than the Market-Constraint Scenario because the introduction of employment at the project site would attract commuters from the San Joaquin Valley that would otherwise be destined for the job centers in the Livermore-Amador Valley. Thus, the project would serve to intercept a portion of commute trips over the Altamont Pass. At the same time, the project's residential development would generate traffic bound for the job centers in the Livermore-Amador Valley area and other parts of the Bay Area. By the year 2010, all locations along I-205 would be operating at LOS F without any improvements, as would I-580 through the Altamont Pass and west of Vasco Road, due to traffic generated by the Proposed Project combined with other cumulative growth in the region. By 2010, I-205 would operate at LOS F during peak hours with or without construction of either the Market-Constraint or the Proposed Project scenarios, due to cumulative growth in the region as a whole.

Some improvements in LOS on local freeways would occur after implementation of both TDM measures and construction of additional lanes in the early phases of the project. For example, the LOS for I-205 would improve from LOS F to LOS C for many segments of I-205 for the Proposed Project Scenario in 1995 if two additional lanes were constructed as proposed in the Regional Transportation Plan (Table 4.14-13A). By 2010, however, I-205 would operate at LOS D, and in one segment, LOS F, even with TDM and the addition of four more lanes (Table 4.14-13A). By 2010, no freeways in the project vicinity would operate at a LOS better than D, assuming construction of the Proposed Project along with all other cumulative growth in the

4.14 TRANSPORTATION

region. All analyzed segments of I-580 west of I-205, and I-205 between Hansen Road and Patterson Pass Road, would operate at LOS F in the year 2010, even with TDM and the addition of lanes (Table 4.14-13A).

The project sponsor has developed a phasing approach that seeks to provide ample opportunity for accommodating a substantial portion of the total work trips and shopping trips within the site at each phase of the project. A monitoring program based on the amount of employment actually provided within the site at each phase would be essential to ensure that the assumptions for a high rate of internal travel remain valid. If the development and occupancy of industrial and commercial land uses were to lag substantially from the phasing plan proposed by the project sponsor, more project residents would travel away from the project site to jobs and/or shopping areas, possibly resulting in worse impacts than have been analyzed here. One means of conducting a phased monitoring program would be to approve a Specific Plan for each phase of development.

Market-Constraint Scenario

The impacts to the freeway system from implementation of the Market-Constraint Scenario would result in more cumulative traffic added to all freeway segments, since fewer Mountain House and other County residents would be working at the project site, and more County residents would be commuting to jobs in the Bay Area. Under the Market-Constraint Scenario, the project would add 17,000 daily trips by 2010 to I-580 at the Altamont Pass compared to ~~4,000~~ **4,900** trips by 2010 under the Proposed Project Scenario. The Proposed Project Scenario would add more traffic to the Altamont Pass segment of I-580 (9,500 trips) in the initial phase. By 2010, a greater share of project residents would be employed within the project site, reducing the total traffic added to I-580 west of the site. With cumulative growth and without TDM or additional lanes, LOS F would result at all freeway locations by 2010 (Table 4.14-13B) except on I-580 south of Patterson Pass Road (LOS C). Again, it should be noted that without improvements, LOS F conditions would prevail on these same segments with or without development of the project, either as proposed by the project sponsor or as the Market-Constraint Scenario.

Freeway impacts under the Market-Constraint Scenario would be similar to the Proposed Project Scenario for all phases of development. In 1995, the LOS would improve from LOS F to LOS C for all segments of I-205 adjacent to the project if TDM and construction of additional lanes occurred. However, by 2010, the LOS on local freeways would deteriorate to D, E, and F even with TDM and additional lanes (Table 4.14-13B).

Mitigation Measures

- 4.14-2(a) *The project proponent should be required to fund their fair share of the cost of preparing a Project Study Report, according to Caltrans standards, for the I-580 freeway over the Altamont Pass. The project proponent, with the County, should work with Caltrans Districts 4 and 10 and Alameda County to evaluate the potential for implementation of truck climbing lanes on the uphill portions of I-580 over the Altamont Pass.*

- 4.14-2(b) *As part of any Project Study Report(s) required to be prepared by the project proponent to study the most impacted freeway interchanges and identify specific required improvements (see Mitigation Measures in the next section), the developer should also be required to analyze in greater detail the impacts of the project on the mainline freeways **affected by the project**. The Project Study report(s) should identify the project proponent's fair share contribution to the funding of future freeway lane widenings. The developer should be required to fund the fair share contribution prior to when the impacts are expected to occur.*
- 4.14-2(c) *The project sponsor, with the County, should be required to coordinate the preparation and adoption of Project Study Report(s) with any Specific Plans. A comprehensive Infrastructure and Financing Plan that considers all phases of the project should be required to be prepared by the project sponsor and adopted by the County, prior to the approval of any Specific Plans. The Infrastructure and Financing Plan should identify the specific freeway mainline and interchange improvements that would be required to serve each phase of development, and should recommend a schedule for the preparation and adoption of Project Study Reports to implement these improvements. The County should not approve the Specific Plan for the first phase of the project until the required freeway improvements and funding sources **for that phase** have been identified and the Project Study Report schedule has been approved by Caltrans.*
- 4.14-2(d) *A Specific Plan for each phase of the project should be prepared and approved to ensure that industrial and commercial job development does not occur later than as proposed by the project sponsor. A monitoring program should be implemented for each phase prior to approval of the next phase to ensure that the assumptions regarding the amount of internal travel remain valid. Monitoring is also addressed under Mitigation Measure 4.14-1(f).*

Impact

- 4.14-3 **The project would increase traffic volumes on adjacent freeway interchanges and require interchange improvements.**

By 2010, an estimated 10,000 project-generated trips would be added to the Grant Line/I-580 interchange, and nearly 40,000 trips would be added at the Patterson Pass/I-205 interchange (Figure 4.14-4). By 2010, both interchanges would need substantial improvements, including additional turn lanes, an additional northbound through lane at the Grant Line/I-580 interchange, and additional lanes on the Patterson Pass Road structure over I-205. The I-205/Patterson Pass interchange would need to be rebuilt as a partial cloverleaf interchange on the south side of I-205 by 2010 to accommodate project traffic, with a southbound-to-eastbound loop on-ramp. The cost of this improvement would be in the range of \$8 to \$12 million. **The I-205/Patterson Pass Road Interchange should be studied in more detail at the Specific Plan stage to determine if a partial cloverleaf configuration on the north side of I-205 would be needed, with a loop ramp from northbound Patterson Pass Road to westbound I-205.** Development in other areas would generate the need for additional lanes on the Patterson Pass Road overcrossing.

4.14 TRANSPORTATION

Prior to 2010, the I-205/Patterson Pass Road interchange would require additional turn lanes and signalization. The eastbound off-ramp would likely require additional turn lanes to accommodate the first

4.14 TRANSPORTATION

phase of project development. Subsequent phases would require further improvements to this and other legs of the interchange. Detailed recommendations for specific intersection improvements (signal phasing, number and length of turn lanes, etc.) should be developed as part of the Specific Plan and Project Study Report processes.

Reconstruction of these interchanges would furnish an opportunity to encourage carpool and transit use by providing ~~ramp metering with~~ HOV bypass lanes on all on-ramps **having ramp metering**. Ramp metering would ~~also~~ work toward maintaining acceptable Levels of Service on I-580 through the Altamont Pass.

Mitigation Measures

- 4.14-3(a) ~~The I-205/Patterson Pass Road interchange should be studied in more detail at the Specific Plan stage to determine if a partial cloverleaf configuration on the north side of I-205 would be needed, with a loop ramp from northbound Patterson Pass Road to westbound I-205. The project proponent should initiate and fund the preparation of a Project Study Report for the I-205/Patterson Pass Road interchange prior to the first phase of development to identify the specific improvements that would be required. After improvements are identified, the project proponent should be required to fund the project's fair share of the needed improvements. Additional turn lanes and other ramp interchange improvements should be constructed as necessary based on the phasing plan adopted for the project, including a partial cloverleaf interchange at Patterson Pass/I-205. The Project Study Report prepared for improvements at this interchange should identify specific lane, turn storage, and signalization needs for each development phase.~~
- 4.14-3(b) Additional freeway interchanges in the area, such as Grant Line Road/I-580 and 11th Street/I-205, should be studied in more detail when a Specific Plan is prepared for the second phase of the project **or earlier**. If the Specific Plan indicates the need, the project sponsor may also be required to initiate and prepare a Project Study Report for these two additional interchanges **during prior to** the second phase of development. ~~The possibility of adding a new interchange at Hansen Road/I-205 may also require study.~~
- 4.14-3(c) As already noted in Mitigation Measure 4.14-2(c), the project sponsor should be required to coordinate the preparation and adoption of Project Study Reports with any Specific Plans.
- 4.14-3(d) At the time of reconstruction of freeway interchanges, ridesharing and transit usage should be promoted by providing ramp metering and HOV bypass lanes on all reconstructed interchanges.
- 4.14-3(e) As part of the Project Study Report(s) prepared by the project sponsor for the I-205 and, possibly, I-580 interchanges, additional improvements to the mainline freeway facilities required to mitigate project impacts should be identified. The project sponsor should be required to fund the project's fair share cost of the lane improvements.

Impact

- 4.14-4 The project would contribute to the need for improvements on Altamont Pass Road, 11th Street, Grant Line Road (between Altamont Pass Road and I-580), and Grant Line Road east of Byron Road.**

Increased traffic on County roads in the project vicinity is shown on Figure 4.14-8A, 4.14-8B, 4.14-9A, and 4.14-9B. The tables that accompany these figures provide additional information regarding impacts on County roads (Tables 4.14-14A and 4.14-14B).

Proposed Project Scenario

Altamont Pass Road, 11th Street, and Grant Line Road (both between I-580 and Altamont Pass Road and east of Byron Road) would carry project traffic to and from regional freeways and other nearby communities. Capacity improvements would be necessary on all these facilities by 2010 based on projected Draft General Plan 2010 development. The proposed project, while not solely responsible for these improvements, would contribute significantly to the projected cumulative traffic growth (Figures 4.14-8A and 4.14-9A, and Table 4.14-14A). Project impacts would be greatest on the section of Grant Line Road between Altamont Pass Road and I-580. In this location, the project would increase future daily traffic volumes by 340 percent in 2010 (from existing ADT volumes of 3,500 to 15,400) (Figure 4.14-9A). This segment would need an additional northbound lane ~~(for a total of three northbound lanes)~~ to accommodate cumulative traffic, including the project.

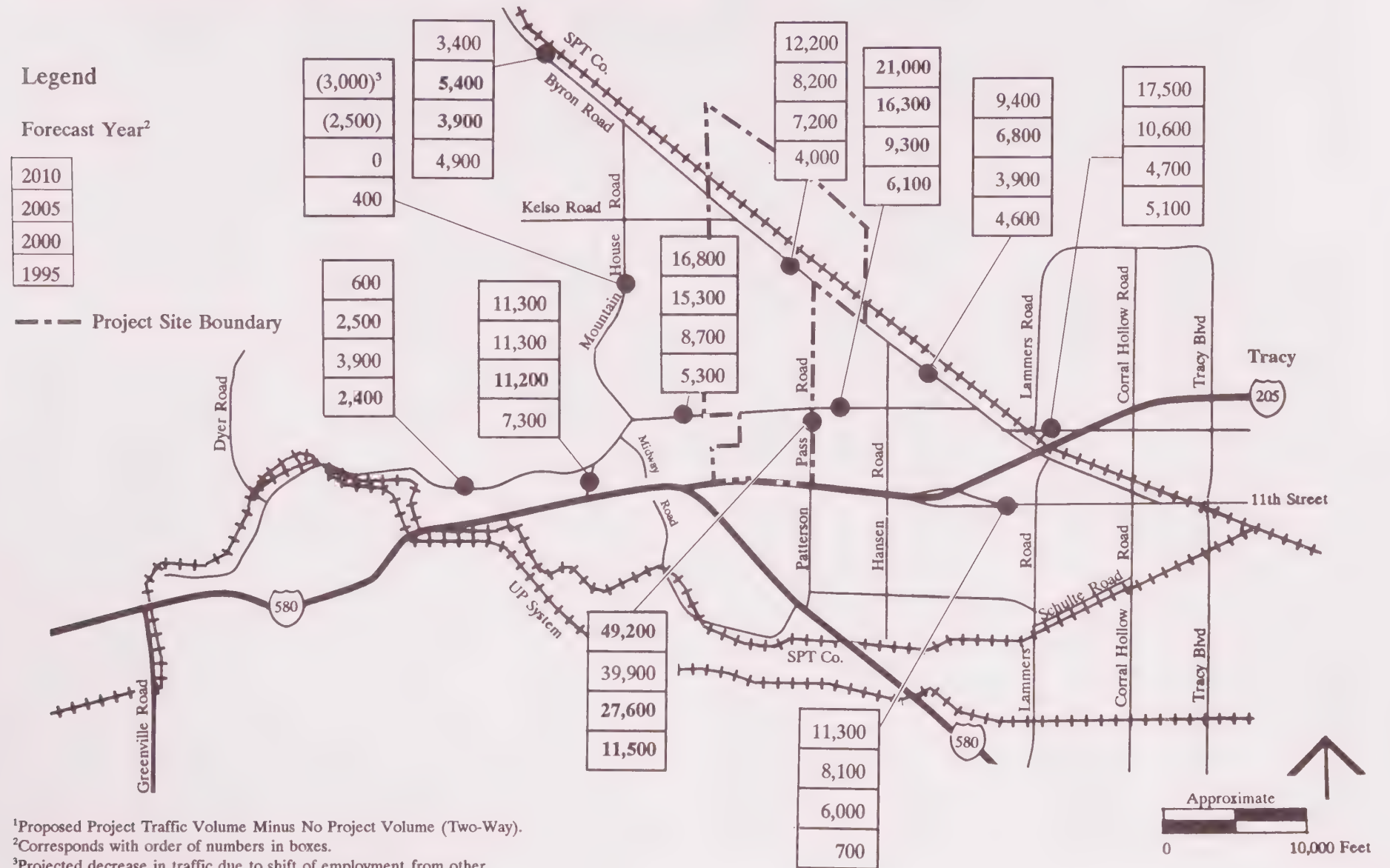
The percentage increase on selected County roads following implementation of the proposed project is shown in Table 4.14-14A. It should be noted that these percentages are based on comparisons of traffic forecasts with and without development of the Mountain House site, and should be interpreted as general indications of the net additional traffic the roadway would carry with development of the project, not as the percent of traffic on the roadway to/from the site. Project trips could represent a higher proportion of the total traffic on the road than indicated in the table.

Tables 4.14-14A and 4.14-14B also show the net increase of traffic with the project as a percent of the total projected traffic growth between 1990 and 2010. This percentage indicates the net effect of the project in relation to cumulative growth, but should not be interpreted as the specific amount of traffic to or from the project. More detailed "select link" analysis to estimate the percent of traffic to or from the project site should be done at the Specific Plan stage to help determine fair share funding for improvements to County roads in the vicinity.

The sponsor intends to provide peak-period HOV lanes along Grant Line Road between I-580 and Mountain House Road to encourage HOV use and provide preferential HOV access onto I-580 from the project site (Trimark, 1990). Traffic modeling conducted for this DEIR indicates that additional lanes would be needed on this segment to accommodate future development, which includes the proposed project. (Between I-580 and Altamont Pass Road, only one additional lane in the northbound direction would be needed. One lane in each direction would be needed between Altamont Pass Road and Mountain House Road.)

**PROJECTED INCREASE IN DAILY TRAFFIC ON COUNTY
ROADWAYS IN PROJECT VICINITY¹
PROPOSED PROJECT SCENARIO COMPARED TO NO PROJECT**

Figure 4.14-8A



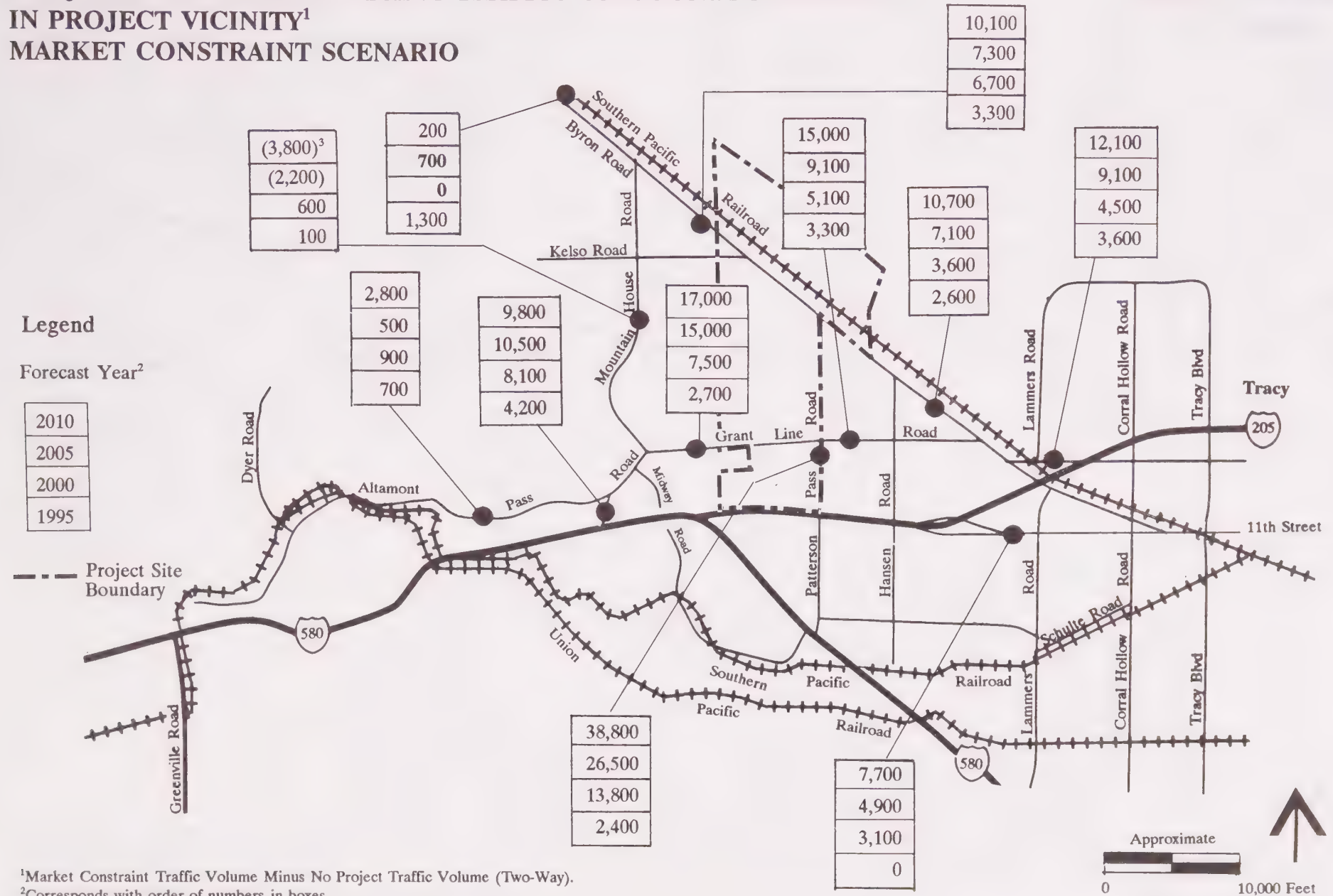
¹Proposed Project Traffic Volume Minus No Project Volume (Two-Way).

²Corresponds with order of numbers in boxes.

³Projected decrease in traffic due to shift of employment from other new communities to Mountain House and associated redistribution of trips.

PROJECTED INCREASE IN DAILY TRAFFIC ON COUNTY ROADWAYS IN PROJECT VICINITY¹ MARKET CONSTRAINT SCENARIO

Figure 4.14-8B



¹Market Constraint Traffic Volume Minus No Project Traffic Volume (Two-Way).
²Corresponds with order of numbers in boxes.
³Projected decrease of traffic compared to No Project, due to redistribution of trips.

TOTAL DAILY TRAFFIC VOLUMES IN PROJECT SITE VICINITY¹ PROPOSED PROJECT SCENARIO

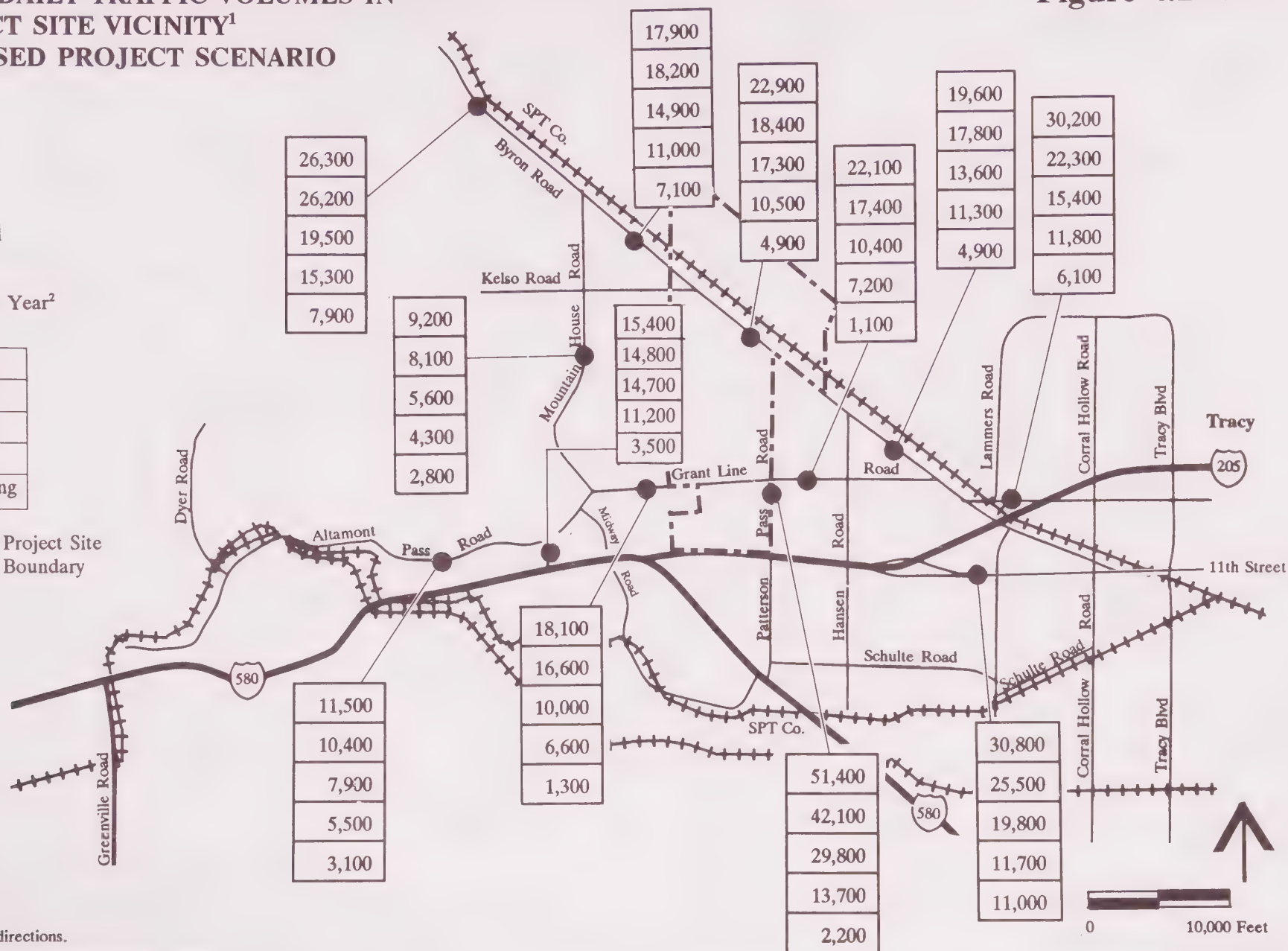
Figure 4.14-9A

Legend

Forecast Year²

2010
2005
2000
1995
Existing

--- Project Site Boundary



¹Total of both directions.

²Corresponds with order of numbers in boxes.

TOTAL DAILY TRAFFIC VOLUMES IN PROJECT SITE VICINITY¹ MARKET-CONSTRAINT SCENARIO

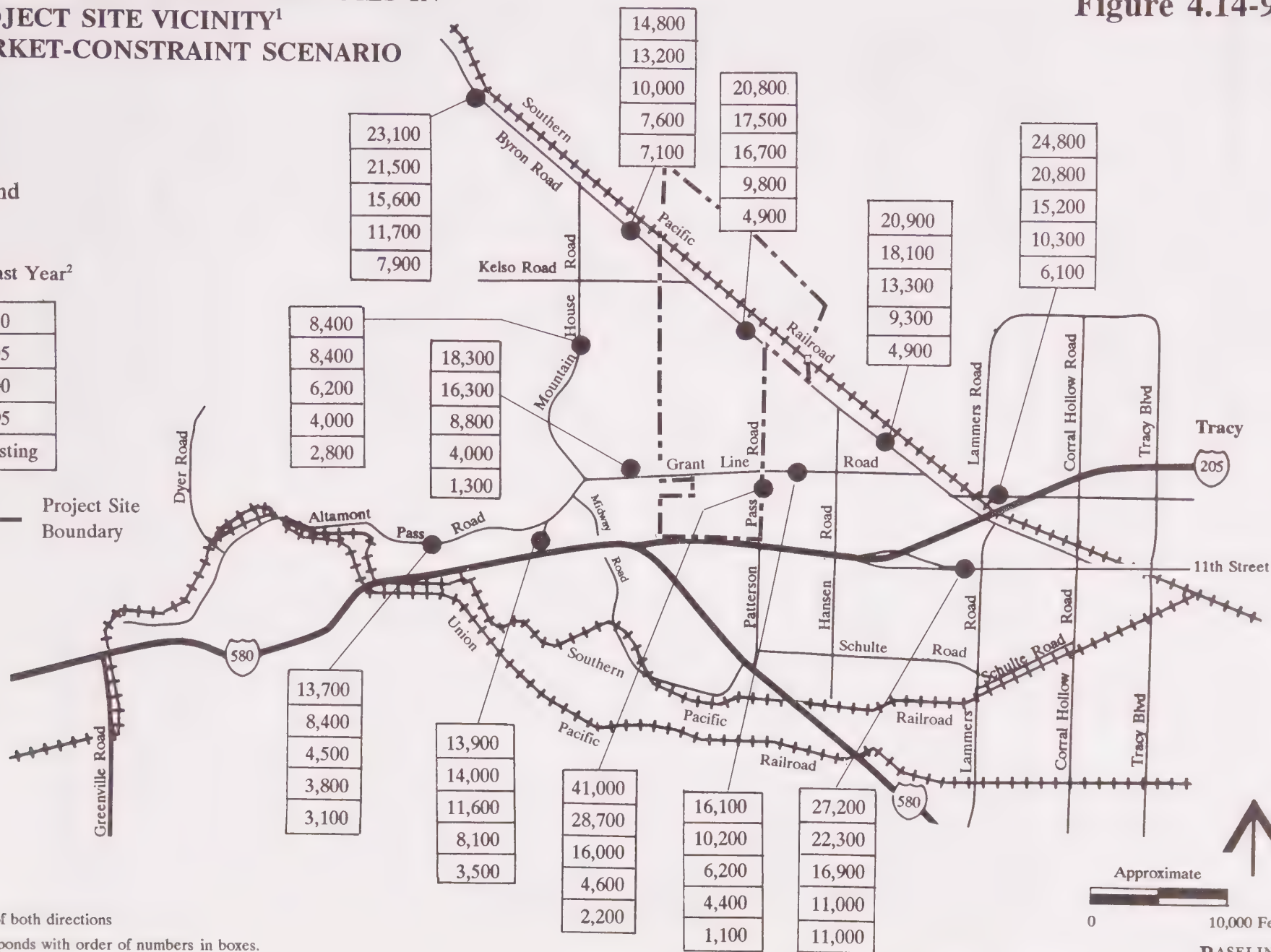
Figure 4.14-9B

Legend

Forecast Year²

2010
2005
2000
1995
Existing

--- Project Site Boundary



¹Total of both directions

²Corresponds with order of numbers in boxes.

TABLE 4.14-14A

**TRAFFIC VOLUME INCREASES ON KEY COUNTY ROADS,
PROPOSED PROJECT SCENARIO**
(Total Two-Way Daily Traffic)

Road	Location	Existing Daily Traffic Volume	Future (2010) Daily Traffic Volume				Percent Total Growth due to Project ²
			No Project	Proposed Project	Volume Increase ¹	Percent Increase ¹	
<u>Phase I - 1995</u>							
11th Street	West of Lammers Road	11,000	11,000	11,700	700	7	100
Altamont Pass Road	East of Dyer Road	3,100	3,100	5,500	2,400	77	100
Grant Line Road	East of Byron Road	6,100	6,700	11,800	5,100	76	89
Grant Line Road	North of I-580	3,500	3,900	11,200	7,300	190	95
<u>Phase II - 2000</u>							
11th Street	West of Lammers Road	11,000	13,800	19,800	6,000	43	68
Altamont Pass Road	East of Dyer Road	3,100	4,000	7,900	3,900	98	81
Grant Line Road	East of Byron Road	6,100	10,700	15,400	4,700	44	51
Grant Line Road	North of I-580	3,500	3,500	14,700	11,200	320	100
<u>Phase III - 2005</u>							
11th Street	West of Lammers Road	11,000	17,400	25,500	8,100	47	56
Altamont Pass Road	East of Dyer Road	3,100	7,900	10,400	2,500	32	34
Grant Line Road	East of Byron Road	6,100	11,700	22,300	10,600	91	65
Grant Line Road	North of I-580	3,500	3,500	14,800	11,300	320	100
<u>Phase IV - 2010</u>							
11th Street	West of Lammers Road	11,000	19,500	30,800	11,300	58	57
Altamont Pass Road	East of Dyer Road	3,100	10,900	11,500	600	6	7
Grant Line Road	East of Byron Road	6,100	12,700	30,200	17,500	140	73
Grant Line Road	North of I-580	3,500	4,100	15,400	11,300	275	95

¹ Proposed Project compared to No Project volume.

² Computed as column 4 (Volume Increase) divided by [(Proposed Project) - (Existing)].

Note: See Figures 4.14-8B A and 4.14-9B A for specific locations.

Source: DKS Associates.

If widening Altamont Pass Road is infeasible, the connection from the project vicinity to I-580 via Grant Line Road could be emphasized by reconstructing the intersection of Grant Line Road/Altamont Pass Road such that Grant Line Road becomes the through road and Altamont Pass Road becomes the secondary road. A southbound HOV lane, extending from Grant Line Road adjacent to the project site to the I-580 westbound on-ramp, would be necessary in addition to a second southbound mixed flow lane. The westbound on-ramp should be widened to provide a queuing area for single-occupant vehicles. In the northbound direction, an

TABLE 4.14-14B

**TRAFFIC VOLUME INCREASES ON KEY COUNTY ROADS,
MARKET-CONSTRAINT SCENARIO**
(Total Two-Way Daily Traffic)

Road	Location	Existing Daily Traffic Volume	Future (2010) Daily Traffic Volume				Percent Growth due to Project ²
			No Project	Market- Constrain t Project	Volume Increase ¹	Percent Increase ¹	
Phase I - 1995							
11th Street	West of Lammers Road	11,000	11,000	11,000	0	0	0
Altamont Pass Road	East of Dyer Road	3,100	3,100	3,800	700	23	100
Grant Line Road	East of Byron Road	6,100	6,700	10,300	3,600	54	86
Grant Line Road	North of I-580	3,500	3,900	8,100	4,200	110	91
Phase II - 2000							
11th Street	West of Lammers Road	11,000	13,800	16,900	3,100	22	53
Altamont Pass Road	East of Dyer Road	3,100	4,000	4,500	900	13	64
Grant Line Road	East of Byron Road	6,100	10,700	15,200	4,500	42	49
Grant Line Road	North of I-580	3,500	3,500	11,600	8,100	230	100
Phase III - 2005							
11th Street	West of Lammers Road	11,000	17,400	22,300	4,900	28	43
Altamont Pass Road	East of Dyer Road	3,100	7,900	8,400	500	6	9
Grant Line Road	East of Byron Road	6,100	11,700	20,800	9,100	78	62
Grant Line Road	North of I-580	3,500	3,500	14,000	10,500	300	100
Phase IV - 2010							
11th Street	West of Lammers Road	11,000	19,500	27,200	7,700	39	48
Altamont Pass Road	East of Dyer Road	3,100	10,900	13,700	2,800	26	26
Grant Line Road	East of Byron Road	6,100	12,700	24,800	12,100	95	65
Grant Line Road	North of I-580	3,500	4,100	13,900	9,800	240	94

¹ Market-Constraint Scenario compared to No Project volume.

² Computed as column 4 (Volume Increase) divided by [(Market-Constraint Project) - (Existing)].

Note: See Figures 4.14-8B and 4.14-9B for specific locations.

Source: DKS Associates.

additional lane would be needed. This lane should not be reserved for HOV use. A northbound HOV lane would serve little purpose and would not be needed.

The project sponsor proposes to provide ramp metering at interchanges providing project access to I-205 and I-580, including Grant Line Road/I-580 and Patterson Pass/I-205 (Trimark Communities, 1990). Ramp metering could be developed without traffic signals at the Grant Line Road/I-580 ramps; however, signalization would likely be needed to accommodate future volumes by 2000 at the I-205/Patterson Pass

4.14 TRANSPORTATION

Road ramps. As noted in Mitigation Measure 4.14-3(a), the project sponsor would be required to initiate and prepare a Project Study Report for Caltrans prior to the beginning of the first phase of development to determine exact improvements required.

East of Byron Road, Grant Line Road provides a key route between the project and the City of Tracy which would be a primary destination for project-generated traffic. By 2010, this road would be expected to carry over 12,000 new daily trips to and from the project (Figure 4.14-8A), which would account for nearly half of the total daily traffic volume, and nearly two-thirds of the total growth between 1990 and 2010.

Eleventh Street in the City of Tracy is an important connection between the City and the project site. To accommodate cumulative 2010 development, 11th Street would require widening to six lanes by 2010 from its current four-lane status. Traffic between Tracy and the project site would account for nearly 30 percent of the expected 2010 daily traffic demand on 11th Street (Table 4.14-14A), and about 57 percent of the total future traffic growth on 11th Street. This represents City of Tracy residents traveling to jobs within Mountain House, Mountain House residents traveling to jobs within the City of Tracy, and residents of each community traveling to the other community for other purposes such as shopping and recreation.

Altamont Pass Road provides an important secondary route through the Altamont Pass. As congestion on I-580 increases in future years, more drivers will seek alternative routes, the most likely of which is Altamont Pass Road. An order of magnitude cost for providing an additional lane in each direction on Altamont Pass Road from Grant Line Road to I-580 in Livermore is \$10-12 million. The ability to provide these additional lanes, given existing physical constraints, would require further study and coordination between Alameda County and San Joaquin County. There are no proposed improvements for Altamont Pass Road in the draft Alameda County Congestion Management Plan. Traffic studies prepared by the project sponsor discuss improvements on Altamont Pass Road in general terms, but the commitment to funding these improvements is not clear. ~~The project sponsor should either provide a southbound HOV lane and associated ramp metering improvements along Grant Line Road between the project site and I-580, or should be responsible for providing a fair share of an additional travel lane in each direction on Altamont Pass Road between Grant Line Road and I-580.~~

Market-Constraint Scenario

Under this scenario, traffic from the project site would also impact Altamont Pass Road, 11th Street, and Grant Line Road (Figures 4.14-8B and 4.14-9B, and Table 4.14-14B).

Mitigation Measures

- 4.14-4(a) *The project sponsor should contribute a proportionate share toward the cost of future improvements on 11th Street, Altamont Pass Road, Grant Line Road between Altamont Pass Road and I-580, and Grant Line Road east of Byron Road (Figure 4.14-10). Proportionate shares toward improvement costs should be based on the proportion of future traffic increases due to the proposed project. Defining the fair share would require coordination between the*

LANE NEEDS IN PROJECT VICINITY BY 2010 CUMULATIVE TRAFFIC INCLUDING PROPOSED PROJECT

Figure 4.14-10

Legend

- Widen from Two Lanes to Four Lanes by 2010
- Widen from Two Lanes to Six Lanes by 2010
- ○ Widen from Two Lanes to Eight Lanes by 2010
(Proposed Project Scenario only. Market Constraint Project Scenario would require six lanes by 2010.)
- Widen from Two Lanes to Three Lanes by 2010
(Add northbound lane)
- ● Widen from Four Lanes to Six Lanes by 2010
- - - - - Project Site Boundary



BASELINE

4.14 TRANSPORTATION

project sponsor, the City of Tracy, and San Joaquin County at the time of the preparation of the Infrastructure and Financing Plan, accompanied by the first phase Specific Plan. Improvements within Alameda County should be reviewed by and coordinated with Alameda County. The San Joaquin County should consider developing a program of traffic impact fees in order to provide cities with funding for improvements to accommodate traffic from new town developments.

- 4.14-4(b) *The project sponsor should contribute a ~~proportionate~~ fair share toward extending local transit service from the City of Tracy to the project site to reduce the number of project vehicle trips on 11th Street and Grant Line Road East. ~~The proposed project would provide both jobs for City of Tracy residents and workers for jobs within Tracy. A reasonable funding approach would be for the City of Tracy and the project sponsor to share equally the cost of transit service between the project and the City of Tracy.~~ Specific arrangements for funding and operating the transit service should be determined by the County, the City of Tracy, and the project sponsor, and should be consistent with countywide transit service arrangements.*
- 4.14-4(c) The County should consider realigning Grant Line Road to form a continuous segment where it meets Byron Road. As part of the realignment of Grant Line Road, need for a grade-separated crossing of the existing Southern Pacific railroad tracks should be evaluated.
- 4.14-4(d) The project sponsor should either provide a southbound HOV lane and associated ramp metering improvements along Grant Line Road between the project site and I-580, or should be responsible for providing a fair share of an additional travel lane in each direction on Altamont Pass Road between Grant Line Road and I-580.

Impact

- 4.14-5 The project would significantly increase traffic volumes on County roads in the immediate vicinity of the project site.

Byron Road, Grant Line Road, and Patterson Pass Road would provide direct access to the project site. All these roads currently carry very low volumes (Figure 4.14-1). Compared to future conditions without the project, the project would cause significant traffic increases on all County roads providing direct site access except for Byron Road northwest of the project site, as shown in Tables 4.14-15A and 4.14-15B. These tables show both the increase due to the project compared with "No Project" cumulative conditions, and also the proportion of the total future traffic increase related to the project, as indicated by comparisons of traffic projections with and without the project.

4.14 TRANSPORTATION

The project sponsor has developed a schedule for proposed road improvements based on the phasing schedule for project development (Korve, 1991). The recommendations for many local road improvements based on the traffic modeling conducted for this DEIR are generally consistent with the recommendations of the sponsor's traffic engineer, indicating that the sponsor assumes a level of transit usage and ridesharing commensurate with suburban development. However, the project sponsor's improvement schedule deals primarily with roads within or adjacent to the project site, including Grant Line Road, Patterson Pass Road, and Byron Road. With the exception of Grant Line Road from Patterson Pass Road to Byron Road, the schedule does not include any improvements beyond the project site, such as freeway interchanges or mainline segments. Recommendations for adjacent County roads by development phase are shown in Table 4.14-16, including areas outside the project boundaries that would be significantly impacted by project traffic. The improvement schedule in Table 4.14-16 also includes the cost estimate for modification of the I-205/Patterson Pass interchange. The list would be applicable to either the Proposed Project or the Market-Constraint Scenario.

With the exception of Byron Road to the northwest of the project site, all these roads would require capacity improvements to accommodate future growth including the project. The improvement schedule shown in

TABLE 4.14-15A

TRAFFIC VOLUME INCREASES ON COUNTY ROADS ADJACENT TO SITE, PROPOSED PROJECT SCENARIO
(Total Two-Way Daily Traffic)

		Future Daily Traffic Volume					
Road	Location	Existing Daily Traffic Volume	No Project	With Project	Volume Increase ¹	Percent Increase ¹	Percent Growth due to Project ²
Phase I - 1995							
Byron Road	Northwest of Mountain House Road	7,900	10,400	15,300	4,900	47	66
Byron Road	Southeast of Patterson Pass Road	4,900	6,700	11,300	4,600	69	72
Grant Line Road	East of Mountain House Road	1,300	1,300	6,600	5,300	410	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	7,200	6,100	550	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	13,700	11,500	520	100
Phase II - 2000							
Byron Road	Northwest of Mountain House Road	7,900	15,600	19,500	3,900	25	34
Byron Road	Southeast of Patterson Pass Road	4,900	9,700	13,600	3,900	40	45
Grant Line Road	East of Mountain House Road	1,300	1,300	10,000	8,700	670	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	10,400	9,300	750	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	29,800	27,600	1,250	100
Phase III - 2005							
Byron Road	Northwest of Mountain House Road	7,900	20,800	26,200	5,400	26	30
Byron Road	Southeast of Patterson Pass Road	4,900	11,000	17,800	6,800	62	42
Grant Line Road	East of Mountain House Road	1,300	1,300	16,600	15,300	1,300	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	17,400	16,300	1,500	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	42,100	39,900	1,800	100
Phase IV - 2010							
Byron Road	Northwest of Mountain House Road	7,900	22,900	26,300	3,400	15	18
Byron Road	Southeast of Patterson Pass Road	4,900	10,200	19,600	9,400	92	64
Grant Line Road	East of Mountain House Road	1,300	1,300	18,100	16,800	1,300	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	22,100	21,000	1,900	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	51,400	49,200	2,200	100

¹ Proposed Project compared to No Project volume.

² Computed as column 4 (Volume Increase) divided by [(Proposed Project) - (Existing)].

Note: See Figures 4.14-5 and 4.14-6 **4.14-8A** for specific locations and corresponding numbers.

Source: DKS Associates.

TABLE 4.14-15B

TRAFFIC VOLUME INCREASES ON COUNTY ROADS ADJACENT TO SITE, MARKET-CONSTRAINT SCENARIO
(Total Two-Way Daily Traffic)

Road	Location	Existing Daily Traffic Volumes	Future Daily Traffic Volume				
			No Project	With Market- Constraint Project	Volume Increase ¹	Percent Increase ¹	Percent Growth due to Project ²
Phase I - 1995							
Byron Road	Northwest of Mountain House Road	7,900	10,400	11,700	1,300	13	34
Byron Road	Southeast of Patterson Pass Road	4,900	6,700	9,300	2,600	39	59
Grant Line Road	East of Mountain House Road	1,300	1,300	4,000	2,700	210	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	4,400	3,300	300	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	4,600	2,400	110	100
Phase II - 2000							
Byron Road	Northwest of Mountain House Road	7,900	15,600	15,600	0	0	0
Byron Road	Southeast of Patterson Pass Road	4,900	9,700	13,300	3,600	37	43
Grant Line Road	East of Mountain House Road	1,300	1,300	8,800	7,500	580	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	6,200	5,100	46	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	16,000	13,800	630	100
Phase III - 2005							
Byron Road	Northwest of Mountain House Road	7,900	20,800	21,500	700	3	5
Byron Road	Southeast of Patterson Pass Road	4,900	11,000	18,100	7,100	65	54
Grant Line Road	East of Mountain House Road	1,300	1,300	16,300	15,000	1,150	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	10,200	9,100	830	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	28,700	26,500	1,200	100
Phase IV - 2010							
Byron Road	Northwest of Mountain House Road	7,900	22,900	23,100	200	1	1
Byron Road	Southeast of Patterson Pass Road	4,900	10,200	20,900	10,700	105	67
Grant Line Road	East of Mountain House Road	1,300	1,300	18,300	17,000	1,300	100
Grant Line Road	East of Patterson Pass Road	1,100	1,100	16,100	15,000	1,400	100
Patterson Pass Road	South of Grant Line Road	2,200	2,200	41,000	38,800	1,800	100

¹ Proposed Project compared to No Project volume.

² Computed as column 4 (Volume Increase) divided by [(Market-Constraint Project) - (Existing)].

Note: See Figures 4.14-5 and 4.14-6 **4.14-8B** for specific locations and corresponding numbers.

Source: DKS Associates.

TABLE 4.14-16

**RECOMMENDED PROJECT VICINITY CAPACITY IMPROVEMENTS AND COST ESTIMATES FOR
ADDITIONAL FREEWAY AND ROAD NEEDS BY DEVELOPMENT PHASE ROADWAYS NEAR PROJECT SITE¹**

Year	Road	From	To	Number of Miles	Estimated Cost (dollars)
1995	Byron Road ²	Grant Line Road West	Grant Line Road East	0.5	1,200,000
2000	Patterson Pass Road	I-205	Byron Road	2.8	6,700,000
	Byron Road	Patterson Pass Road	Grant Line Road West	2.8	6,700,000
	Byron Road ³	Mountain House Road	SR 4	7.0	10,500,000
	Grant Line Road	Mountain House Road	Altamont Pass Road	1.0	1,500,000
2005	Patterson Pass Road ⁴	I-205	1st Mountain House minor arterial	0.2	500,000
	Byron Road	Patterson Pass Road	County Line	1.9	4,600,000
	Grant Line Road	Patterson Pass Road	County Line	1.4	3,400,000
	Grant Line Road	County Line	Mountain House Road	1.0	1,500,000
	Grant Line Road ⁵	Altamont Pass Road	I-580	0.5	400,000
	Grant Line Road east	Byron Road	Corral Hollow Road	1.7	4,100,000
	I-580/Grant Line Road interchange Improvements				2,000,000
2010	Grant Line Road	Patterson Pass Road	Byron Road	2.4	5,800,000
	Byron Road	Grant Line Road east	Grant Line Road west	0.5	800,000
	Altamont Pass Road	Grant Line Road	I-580 in Livermore	7.5	11,300,000
	Eleventh Street	I-205	Corral Hollow Road	2.0	3,000,000
	I-205/Patterson Pass interchange improvements				8-12,000,000
Total					72-76,000,000

¹ Includes cost estimates for County roads and one freeway interchange, but does not include costs for possible freeway mainline improvements and additional interchanges. Some of these costs would be shared with other parties. Improvement list applies to both Proposed Project and Market-Constraint Scenarios.

² Would not be necessary with realignment of Grant Line Road to eliminate existing offset in road alignment.

³ These costs may not be the full responsibility of the Mountain House project sponsor.

⁴ Four lanes widened to six lanes.

⁵ Grant Line Road would need widening in only one direction (northbound) between I-580 and Altamont Pass Road.

Note: Except as noted, all cost estimates are based on adding one lane each direction to segment indicated.

Source: DKS Associates.

Table 4.14-16 would allow the roads directly giving project access to regional facilities to continue to provide acceptable Levels of Service. Most of these road needs have been identified in background studies prepared for the project sponsor. Order of magnitude cost estimates based on typical per mile construction costs are also shown (Table 4.14-16). Not included in the table are improvement costs for State facilities (additional interchanges and mainline freeway segments), other than the ~~one~~ **two** interchanges. Detailed cost estimates and funding responsibilities should be developed for State facilities as part of the Infrastructure and Financing Plan, Specific Plan, and Project Study Report process.

4.14 TRANSPORTATION

The development of employment opportunities within the project site would be a critical factor in the amount of traffic added to County roads adjacent to the project site. The proposed land use mix, which balances housing, employment, and commercial facilities, would serve to maximize the level of internal travel at about 70 percent. The existing City of Tracy serves as a comparably-sized town which also has about 70 percent total internal travel, based on the 1991 San Joaquin County Travel Demand Model.

The project sponsor has developed a phasing approach that seeks to provide ample opportunity for accommodating a substantial portion of the total work trips and shopping trips within the site at each phase of the project. A monitoring program based on the amount of employment actually provided within the site at each phase would be essential to ensure that the assumptions for a high rate of internal travel remain valid. If the development and occupancy of industrial and commercial land uses were to lag substantially from the phasing plan proposed by the project sponsor, more project residents would travel away from the project site to jobs and/or shopping areas, possibly resulting in worse impacts than have been analyzed here. One means of conducting a phased monitoring program would be to approve a Specific Plan for each phase of development. A series of Specific Plans would benefit the County by providing an opportunity to compare actual development with the original schedule for occupancy and improvements. Specific Plans for each development phase would also benefit the project sponsor by providing a means of reassessing development plans and commitments to improvements in light of changing long-term market conditions, and government policies.

The project sponsor proposes to promote HOV use through a Transportation Management Organization that would focus on home-end trips as well as the more conventional focus on work-end trips. The home-end strategy would include carpool/vanpool matching service, continued promotion of ridesharing, and distribution of transit and HOV facility information to home buyers.

The sponsor's work-end TDM strategy would include providing ridesharing matching services for all employees, and active involvement by the project sponsor's TMO in promoting TDM programs at individual employment sites within the project site. The project sponsor's TMO would promote a broad transportation demand program that would include transit pass subsidies, ridesharing, flexible working hours, and telecommuting.

To encourage non-auto use, the site plan includes transit stops throughout the project site. At the Specific Plan stage, the integration of transit facilities and site plans for individual development sites should be detailed further.

The Revised Draft County General Plan 2010 and the Draft Congestion Management Program (ConMAG, 1991) include the following transit-related goals and policies relevant to this project:

- The Congestion Management Program (CMP) calls for provision of on-site transit services (either fixed route or dial-a-ride) for new towns at the time the first residential unit is occupied. Such service must

provide connections to a major urban center or a transit hub within the County. Implementation of mitigation measures called out previously for transit service to the Tri-Valley area and the City of Tracy would meet this requirement.

- A trip reduction ordinance (TRO) is required of all local jurisdictions, which must include transportation control measures (TCMs) considered to be at least as strict as those in the Air Quality Attainment Plan being prepared by the San Joaquin Valley Unified Air Pollution Control District. The recommended TCMs in this draft plan, which will become part of the County's Congestion Management Plan upon adoption, include many TSM/TDM measures that are included in the project sponsor's TDM plan or have been recommended as mitigation measures in this document: traffic flow improvements, short range transit, rideshare programs, park-and-ride lots, bicycling programs, trip reduction programs, parking management, telecommunications, and flexible work schedules.

Mitigation Measures

- 4.14-5(a) *Roads providing access to the project site should be widened over time as shown in Table 4.14-16 to accommodate project traffic impacts at each phase of development. With the exception of Byron Road, all these roads would require capacity improvements as a direct result of the project. The project would contribute a majority of added traffic to Byron Road between the project site and Grant Line Road west.*
- 4.14-5(b) *At the Specific Plan stage, the integration of transit facilities and site plans for individual development sites should be detailed further.*

Impact

- 4.14-6 **Project-generated trips would result in significant traffic levels on roadways internal to the site, requiring construction of a comprehensive network of adequately sized internal roadways. Internal roadway needs would be slightly greater with the Proposed Project Scenario than with the Market-Constraint Scenario.**

The proposed project incorporates three existing roads, Byron Road, Grant Line Road, and Patterson Pass Road, to provide major circulation facilities through the site (Figure 4.14-5). All three roads would be improved to major arterial status as part of the project. The internal collector and arterial roads would be designed and built to County standards, as proposed by the project sponsor. These roads would be widened from their existing two lanes to four or six lanes by 2010. Additional primary internal circulation facilities would include two minor arterials parallel and to the west of Patterson Pass Road south of Byron Road, minor east-west arterials on either side of the proposed town center, and a minor arterial loop in the northern section of the site north of Byron Road (Figure 4.14-5). Figure 4.14-5 also shows the proposed on-site transit and bicycle facilities. These include twelve transit stops with small park-and-ride lots, striped bike lanes or designated bike routes on minor arterials, and a system of off-street bicycle and pedestrian paths.

4.14 TRANSPORTATION

The proposed internal circulation facilities generally would be adequate to accommodate project traffic to 2010 for both the Proposed Project and the Market-Constraint scenarios. However, in a few locations additional capacity should be provided to meet the County's applicable LOS C standard for County roads for both the Proposed Project and the Market-Constraint scenarios. These locations are highlighted in Figure 4.14-5 and are discussed below. The project sponsor has indicated that the County will be requested to allow urban Levels of Service (LOS D or better) within the project boundaries. If this request is granted, the need for additional capacity at these selected internal locations would be reduced or eliminated. This EIR analysis, however, assumes the existing LOS C standard consistent with the Revised Draft General Plan 2010.

The short (1,000-foot) section of minor arterial adjacent to the freeway commercial site at the northwest quadrant of the I-205/Patterson Pass interchange (Figure 4.14-5) would operate at LOS F. The projected 2010 daily volume (26,000 daily vehicles for the Market-Constraint Scenario and 30,000 daily vehicles for the Proposed Project Scenario) for this segment would exceed the County's daily maximum capacity standard for a minor arterial (25,000 ADT). An additional lane in each direction would provide satisfactory service (LOS C or better) under the Market-Constraint Scenario. Even with the added lanes, the LOS C threshold would be slightly exceeded under the Proposed Project Scenario; however, due to the localized nature of this condition, this may be considered acceptable.

With commercial development at the northwest corner of the Patterson Pass Road/I-205 interchange, the segment of Patterson Pass Road between I-205 and the first arterial access point into the project site would have high weaving volumes in the future. More distance to accommodate weaving traffic would be desirable to avoid negative effects on traffic operations in the vicinity of the interchange.

The project's circulation plan includes two minor north-south arterials in the area of the site south of Byron Road (Figure 4.14-5). The segment of the west arterial north of the town center would operate at LOS E or worse with the Proposed Project Scenario, but would operate satisfactorily with the Market-Constraint Scenario. The segments of this arterial on either side of Byron Road (approximately 1,000 feet to the north and south) are proposed as six-lane major arterials. This designation should be continued south to the town center (Figure 4.14-5) as this roadway would be the primary connection between the town center and the portion of the site north of Byron Road, and additional capacity would be necessary to carry projected volumes at buildout.

The project sponsor has indicated a preference for four-lane arterials within the site over six-lane arterials. To retain four lanes at this location (between Byron Road and the town center), an additional arterial may need to be developed at the Specific Plan stage.

The proposed site plan includes an east-west collector road between the proposed town center and Patterson Pass Road (Figure 4.14-5). The collector road would have a split intersection on Patterson Pass Road. It would be desirable to eliminate the collector road to reduce the number of intersections on Patterson Pass

Road, which will be a high-volume arterial in the future. By eliminating this road, the inward orientation of the town center could also be strengthened.

In addition to analysis of internal road capacity and sizing, the layout of the internal street system was evaluated. Access between the north part of the project (north of Byron Road) and the City of Tracy would be circuitous under the proposed circulation system, and may result in excessive turn movements and driver

delay. The site plan includes two proposed major north-south arterials crossing Byron Road and connecting the northern and southern portions of the project (Figure 4.14-5). One of these, at Kelso Road, would be at grade. The second crossing, extending from Patterson Pass Road, is proposed to be grade-separated, with no direct access to and from Byron Road. As currently proposed, drivers coming from Tracy to the project site would use Byron Road, turn left at the existing Patterson Pass Road-Byron Road intersection, and then turn right onto a new north/south major arterial that would cross over Byron Road and the adjacent railroad tracks to access that portion of the site north of Byron Road. Drivers traveling from the area of the project north of Byron Road into Tracy would follow a reverse pattern. Additional access to and from Byron Road would be provided via the existing at-grade crossings at Wicklund and Henderson Roads. Both of these crossings would provide entrances that would function more as a "back door" than a primary entrance from Byron Road, based on the current site plan. The major land use attractions on the north side of Byron Road would be most accessible via the Patterson Pass Road overcrossing and the relocated Kelso Road at-grade crossing. The three existing at-grade crossings within the site (at Kelso Road, Henderson Road, and Wicklund Road) would be upgraded but retained as at-grade crossings. The one new rail crossing would be grade-separated, continuing on as an extension of Patterson Pass Road, with no direct access to or from Byron Road.

Mitigation Measures

- 4.14-6(a) *The internal road adjacent to the Freeway Commercial parcel in the project's southeast corner should be upgraded to major arterial status with six travel lanes by 2010. This road would constitute the primary access to that portion of the project site south of Grant Line Road. Six lanes on this segment would provide sufficient capacity to provide LOS D operation, closely approaching LOS C. **This road should either be shifted to the north to allow greater weaving distance on Patterson Pass Road south to I-205, or should be combined with the collector road shown across from existing Von Sosten Road to form a single arterial roadway entrance to the southwest corner of the project.***
- 4.14-6(b) *Under the Proposed Project Scenario, the north-south minor arterial proposed for the west side of the project site (Figure 4.14-5) should be upgraded to a six-lane major arterial between the proposed town center and that portion of the site north of Byron Road by 2005.*
- 4.14-6(c) *Options for direct access between Byron Road and the northern portion of the site should be considered, such as flyover ramps to and from Byron Road or interchanges where Byron Road passes under the proposed major arterial extension of Patterson Pass Road. Any such direct access alternative should include a grade-separated railroad crossing. This mitigation measure would reduce delay for travel between the site and the City of Tracy by providing a less circuitous connection between Byron Road and the portion of the site north of Byron Road.*
- 4.14-6(d) *The Specific Plan should provide for development of an additional minor arterial in the west-central area of the site that would allow internal arterials in this portion of the site to remain four*

4.14 TRANSPORTATION

lanes at buildout or, alternatively, expand the currently proposed minor arterial to six lanes in this segment.

4.14 TRANSPORTATION

- 4.14-6(e) *The collector roadway couplet connection between Patterson Pass Road and the town center should be eliminated.*

Impact

- 4.14-7 **The project would generate a significant demand for parking.**

The project sponsor proposes to meet or exceed County parking standards for residential, commercial, and industrial uses (Korve, 1991). These standards generally would accommodate the project's parking demand. The mixed-use areas of the project site (e.g. the Town Center area) present an opportunity to reduce the land area devoted to parking by sharing parking areas based on peak demands for adjacent land uses occurring at different times of the day. For example, parking used for offices, banks, or retail shops during the day could be used by restaurants or movie theaters in the evening. At the Specific Plan stage, site plans should be developed to include nearby uses with individual demands for parking that occur during different times of the day.

Mitigation Measures

- 4.14-7(a) *Further detailed analysis of parking demand, parking supply, and shared parking opportunities should be undertaken during the Specific Plan process when detailed site plans become available.*
Parking provisions should comply with requirements of the County's prevailing Congestion Management Program.
- 4.14-7(b) *Where feasible, mixed-use districts should be developed to maximize the use of shared parking and reduce the total land area need for parking.*

Impact

- 4.14-8 **The project would increase the demand for bicycle travel within the project site as well as between the site and adjacent developed areas.**

The scale of the project would generate a significant demand for bicycle travel. The project sponsor has proposed design concepts within the site for both recreational bicycle trips and bicycle trips to school, work, and shopping (Figure 4.14-5).

Mitigation Measures

- 4.14-8(a) *Bicycle use between the project and other nearby developed areas should be encouraged by the provision of Class II bicycle lanes on major arterials and County roads connecting the site to Tracy and Alameda County. The sponsor's proposed bicycle facilities and accommodations should be incorporated into Specific Plan design standards.*

- 4.14-8(b) *A continuous Class II bicycle lane should be extended by the project sponsor into the City of Tracy. Grant Line Road should be considered for continuous bicycle lanes between the project site and the City of Tracy.*

- 4.14-8(c) *A continuous bicycle route should be provided by the sponsor along Altamont Pass Road or a comparable route to connect the project site and Alameda County.*

Impact

- 4.14-9 **The project would increase the number of vehicles crossing the existing Southern Pacific railroad track that runs through the site.**

Three grade crossings within the project site exist along the Southern Pacific Transportation Company railroad track that runs through the site parallel to the Byron Highway. These crossings are located on Kelso Road, Henderson Road, and Wicklund Road. The project sponsor proposes to upgrade the existing at-grade crossings at Kelso Road and Henderson Road. A new grade-separated crossing would be constructed between Kelso Road and Henderson Road to provide grade-separated access between the northern and southern parts of the project (Figure 4.14-5).

Mitigation Measures

- 4.14-9(a) *Improvements provided by the project sponsor at the two at-grade crossings within the site on Kelso Road and Henderson Road should include crossing gates, lights, and appropriate signage. **Pedestrian access to the railroad right-of-way should be restricted to ensure safe conditions. Pedestrian crossings over the railroad tracks should be considered at the Specific Plan stage.***
- 4.14-9(b) **A sound wall along the north side of the Southern Pacific line bisecting the site should be provided to restrict access to the tracks from the adjacent residential areas. The proposed pedestrian/bicycle trail along Mountain House Creek should be grade-separated where it crosses the tracks to ensure pedestrian safety.**

The Market-Constraint Scenario would contribute less than one percent to future 2010 cumulative volumes on Byron Road northwest of the project site (Table 4.14-15B). This increase is considered a less-than-insignificant impact. Based on the traffic analysis using the 1991 San Joaquin County Travel Demand Model, one additional lane in each direction on Byron Road from Mountain House Road to State Route 4 would be necessary to accommodate 2010 cumulative development. Under the Market-Constraint Scenario, the project would not noticeably contribute to the need for additional lanes on Byron Road. Traffic volumes on this section of Byron Road are projected to increase to 23,000 daily vehicles by 2010 (Figure 4.14-9B). Byron Road is proposed to be included as a designated "regional route" in the Transportation Action Plan for East Contra Costa County, which is currently being developed (Contra Costa Traffic Authority, 1991). Level of Service standards and corresponding mitigation measures to accommodate cumulative traffic growth on this road will be examined as part of the Contra Costa Transportation Action Plan process expected to be completed by 1993.

4.15 AIR QUALITY

SETTING

Air Basin Characteristics

The project site is located in the northwestern corner of the San Joaquin Valley air basin (Figure 4.15-1). This air basin is a well-defined climatic region, primarily because of the topographic barriers that form distinct boundaries on three sides of the basin. The western boundary is formed by the Coast Range, the southern boundary by the Tehachapi Mountains, and the eastern boundary by the Sierra Nevada. Only the northern boundary is not marked by a distinct topographic feature. At the northern end of the basin, the Carquinez Strait, a sea level gap between the Coast Ranges, extends to the west and is a major source of ventilation for the basin.

The project site is located near the Altamont Pass, a gap in the Coast Range mountains separating the Livermore Valley from the Central Valley. Ventilation in this area is excellent much of the year, with predominantly westerly to northwesterly winds. Wind speeds are generally highest during the spring months and lightest in the fall and winter. The general wind flow in the rest of the San Joaquin Valley is from the northwest most of the year, carrying pollutants from the northern portion of the valley toward the south. This general flow also transports pollutants from the San Francisco Bay Area into the air basin.

Atmospheric stability refers to the tendency of the atmosphere's thermal layers to suppress or promote mixing of pollutants. The occurrence of high atmospheric stability, known as inversion conditions, severely reduces vertical mixing of pollutants. The San Joaquin Valley air basin has surface-based inversions during the morning hours throughout the year.¹ Elevated inversions are much less frequent than surface inversions.² In terms of mean mixing depth (the layer of air available for vertical mixing of pollutants), winter has the worst inversion characteristics and spring the best. The adverse conditions in winter are a result of the light winds and weak sunshine, two factors that also contribute to the "tule" fogs that frequently occur in the area during the winter months (California Air Resources Board, 1974).

Air Quality Standards and Pollutant Characteristics

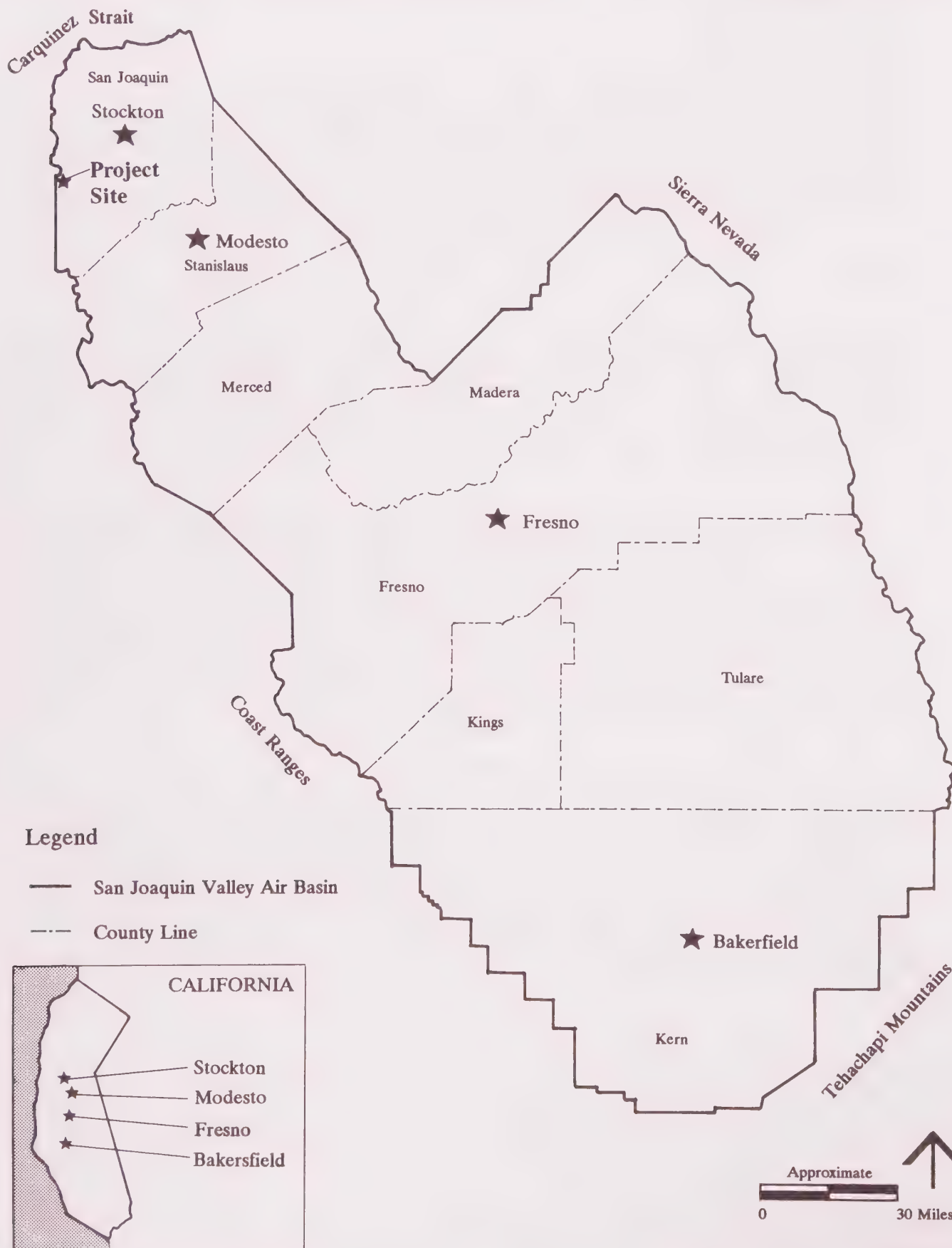
The Mulford-Carrell Act of 1969 and the Clean Air Act of 1970 established State and Federal air quality standards for several pollutants (Table 4.15-1). These standards are divided into primary standards, designed to protect the public health, and secondary standards, intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. The state of California and the Federal ambient air quality standards are different in many cases. In particular, the State standards for ozone, carbon monoxide (1-hour standard), and PM-10 (suspended particulate matter) (24-hour) are considerably more stringent than the Federal standards.

¹A surface-based inversion has its base located at ground level.

²Elevated inversions are layers of warmer air elevated above the ground that limit the vertical mixing of pollutants.

SAN JOAQUIN VALLEY AIR BASIN

Figure 4.15-1



The pollutants covered by the above-described legislation are known as "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. Another group of substances, known as Toxic Air Contaminants (TACs), are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants.

The amount of a given pollutant in the atmosphere is determined by the amount of pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major factors affecting transport and dilution are terrain, wind, atmospheric stability, and, for photochemical pollutants, sunshine.

Suspended Particulate Matter (PM-10)

Suspended particulate matter

consists of solid and liquid particles of dust, soot, aerosols, and other matter, which are small enough to remain suspended in the air for a long period of time. A portion of the suspended particulate matter in the air is due to natural sources such as wind-blown dust and pollen. Man-made sources include combustion, automobiles, field burning, factories, and unpaved roads. Particulate matter also results from photochemical reactions in the atmosphere.

The effects of high concentrations of PM-10 on humans include aggravation of heart/lung disease symptoms. Non-health effects include reduced visibility and soiling of surfaces (Stern, 1977).

TABLE 4.15-1

AMBIENT AIR QUALITY STANDARDS (ppm unless otherwise noted)

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1 hour	0.12	0.09
Carbon monoxide	8 hours	9.0	9.0
	1 hour	35.0	20.0
Nitrogen dioxide	Annual	0.05	--
	1 hour	--	0.25
Sulfur dioxide	Annual	0.03	--
	24 hours	0.14	0.25
	1 hour	--	0.5
PM-10	AGM	--	30.0 $\mu\text{g}/\text{m}^3$
	Annual mean	50.0 $\mu\text{g}/\text{m}^3$	--
	24 hours	150.0 $\mu\text{g}/\text{m}^3$	50.0 $\mu\text{g}/\text{m}^3$
Lead	30-day average	--	1.5 $\mu\text{m}/\text{m}^3$
	3-month average	1.5 $\mu\text{g}/\text{m}^3$	--
Hydrogen sulfide	1 hour	--	0.03
Vinyl chloride	24 hours	--	0.01

Notes: ppm = parts per million.
 -- = not applicable.
 AGM = annual geometric mean.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.

Carbon Monoxide

Carbon monoxide is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels, and its main source in San Joaquin County is automobiles. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties, reduced lung capacity, and impaired mental abilities (Stern, 1977).

Ozone

Ozone is the most prevalent of a class of photochemical oxidants formed in the urban atmosphere. The creation of ozone is a result of complex chemical reactions between hydrocarbons and oxides of nitrogen in the presence of sunshine. Unlike other pollutants, ozone is not released directly into the atmosphere from any sources. The major sources of hydrocarbons and oxides of nitrogen and hydrocarbons, known as ozone precursors, are combustion sources such as factories and automobiles, and evaporation of solvents and fuels. The health effects of ozone are eye irritation and damage to lung tissues. Ozone also damages some materials, such as rubber, plants, and crops. Typical ozone damage to sensitive crops include visible leaf damage and decreased growth and yield (Stern, 1977).

Nitrogen Dioxide

Nitrogen dioxide is a reddish-brown toxic gas and is one of the oxides of nitrogen that results from combustion. It is the only oxide of nitrogen which is toxic; however, other oxides of nitrogen, particularly nitric oxide, are converted to nitrogen dioxide in the presence of sunshine. Major sources of oxides of nitrogen are automobiles and industry. The health effects of nitrogen dioxide are irritation to lung tissues and aggravation of existing pulmonary problems.

Sulfur Dioxide

Sulfur dioxide is a colorless gas with a pungent, irritating odor. It is created by the combustion of sulfur-containing fuels and is known to oxidize to sulfur trioxide, which combines with moisture in the atmosphere to form a sulfuric acid mist. Sulfur dioxide damages and irritates lung tissue, and accelerates corrosion or deterioration of metals, painted surfaces, stone, and textiles.

Lead

Atmospheric lead occurs in the form of airborne lead particles. The dominant source of lead in urban atmospheres is lead compounds contained in gasoline. Lead accumulates in the body tissues, where it impairs blood function and nerve construction (Stern, 1977).

Although State standards do exist for vinyl chloride and hydrogen sulfide, these pollutants are of secondary importance in San Joaquin County.

Regional Air Quality Planning

The U.S. Clean Air Act Amendments of 1977 required that each state identify areas within its borders that do not meet Federal primary standards as non-attainment areas.³ All of San Joaquin County is considered non-attainment under the Federal Clean Air Act for ozone. The County is attainment for carbon monoxide, with the exception of urbanized Stockton. San Joaquin County is designated as a Group 2 area for suspended particulate matter (PM-10).⁴ The County is either attainment or unclassified for other pollutants (California Air Resources Board, 1989).

The Clean Air Act required the preparation of an attainment plan showing how the Federal standards were to be met by 1982. Because some areas in California were not able to attain these standards by 1982, the State requested, and was granted, an extension to 1987. The San Joaquin County Planning Department, with the assistance of the San Joaquin County Unified Air Pollution District and the San Joaquin County Council of Governments, prepared the Air Quality Management Plan in 1982 (San Joaquin County Planning Department, 1982). San Joaquin County was one of many non-attainment areas in California that failed to meet the Federal ambient air quality standards by 1987.

The Federal Clean Air Act Amendments of 1990 require that non-attainment areas develop plans and strategies that will reduce pollutants by 15 percent during the first six years, then three percent annually thereafter, until the standards are met. Areas must meet the standards within 5 to 17 years, depending on the severity of the problem. A draft attainment plan for PM-10 has been prepared by the San Joaquin Valley Unified Air Pollution Control District, and final adoption of the plan is scheduled for November 1991 (SJVUAPCD, 1991a). A revised attainment plan for carbon monoxide is required to be adopted by November 1992; the attainment plan for ozone in November 1993.

The California Clean Air Act, enacted in 1988, requires local air pollution control districts to prepare air quality attainment plans for ozone and carbon monoxide by 30 June 1991. Generally, these plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods. The Act also grants air districts explicit statutory authority to adopt indirect source regulations and transportation control measures, including measures to encourage or require the use of ridesharing, flexible work hours, or other measures that reduce the number or length of vehicle trips.⁵

Under the California Clean Air Act, San Joaquin County is considered non-attainment for ozone and suspended particulate matter (PM-10). The Stockton urbanized area is considered non-attainment for carbon monoxide under the State Clean Air Act, as well as under the Federal Clean Air Act. The County is either

³Non-attainment: considered as not attaining the Federal ambient air quality standards.

⁴Group 2 areas include those where attainment of the standard is uncertain.

⁵Indirect source: shopping centers, office parks, or other facilities that do not directly emit pollutants but attract vehicles that emit pollutants.

4.15 AIR QUALITY

attainment or unclassified for other pollutants under the California Clean Air Act. ~~A draft of The State-~~ required attainment plan for ozone and carbon monoxide has been recently released **adopted** (SJVUAPCD, 1991b 1992), ~~and adoption of a final plan is scheduled for December 1991.~~

The key policies of the 1991 Air Quality Attainment Plan (AQAP) are:

- **Provide for five percent per year reductions in non-attainment emissions, or include "every feasible measure" in the AQAP.**
- **Establish a permitting program that achieves no net increase in stationary source emissions.**
- **Develop a strategy to reduce vehicle trips, use, and miles traveled.**
- **Reduce population exposure to non-attainment pollutants by 25 percent by 31 December 1994.**
- **Establish Best Available Retrofit Control Technology (BARCT) requirements for all permitted sources.**
- **Develop indirect and area source programs.**

Current Air Quality

The California Air Resources Board maintains three air quality monitoring sites within San Joaquin County. All three monitoring sites are located in the Stockton area, about 17 miles northeast of the project site.

Two monitoring sites outside San Joaquin County include the Livermore site located about 12 miles west of the project site in Alameda County and the Modesto site, about 25 miles southeast of the project site in Stanislaus County. Because of the prevailing wind patterns, Livermore is generally located upwind of the project site, while the Modesto site is generally downwind of San Joaquin County and the project site.

The standards for ozone (State and Federal) and PM-10 (State) are exceeded in eastern Alameda County, San Joaquin County, and Stanislaus County (Table 4.15-2). Carbon monoxide, a localized pollutant, is a problem in metropolitan areas within the San Joaquin Valley (i.e., Stockton and Modesto). The standards for other pollutants would be expected to be met at the project site and in the surrounding vicinity.

IMPACTS AND MITIGATION MEASURES

Project air quality impacts can be separated into two categories: short-term impacts due to construction, and long-term impacts due to project operation. Impacts in each category can be classified as having effects on either a regional or local scale. According to CEQA, a project will normally have a significant adverse impact

4.15 AIR QUALITY

on air quality if it will violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations.

Because carbon monoxide concentrations can be predicted quantitatively, the project's potential for violating the ambient air quality standards for carbon monoxide is used in this EIR to determine the significance of **localized** air quality impacts. Construction dust and potential land use conflicts can "expose sensitive receptors to substantial pollutant concentrations," and therefore are also addressed in this DEIR as potentially significant localized impacts.

For **regional** pollutants, violation of air quality standards cannot be used as a threshold of significance since the standards are exceeded in San Joaquin County, the entire San Joaquin Valley air basin, and the adjacent Bay Area air basin. Impacts are judged on their contribution to the regional emission burden, using the following thresholds of significance suggested by the San Joaquin Unit of the San Joaquin Valley Unified Air Pollution Control District: emissions of ozone precursors (hydrocarbons or oxides of nitrogen) exceeding 150 pounds per day and emissions of PM-10 exceeding 80 pounds per day (Kwong, 1991).

TABLE 4.15-2

AIR QUALITY DATA FOR PROJECT AREA
1986-1990¹

Year	Number of Days Standard Was Exceeded at:				
	Stockton (Hazelton)	Stockton (Claremont)	Stockton (Mariposa)	Livermore	Modesto
<u>Carbon Monoxide (State and Federal 8 Hours)</u>					
1986	1	9	--	0	0
1987	0	1	--	0	0
1988	1	1	--	0	2
1989	1	6	--	0	10
1990	2	7	--	0	3
<u>Ozone (Federal 1 Hour)</u>					
1986	0	--	3	0	2
1987	0	--	1	0	5
1988	1	--	3	0	0
1989	0	--	0	2	0
1990	0	--	1	1	1
<u>Ozone (State 1 Hour)</u>					
1986	11	--	30	8	39
1987	10	--	53	14	48
1988	18	--	29	7	29
1989	3	--	7	9	20
1990	9	--	16	8	13
<u>Nitrogen Dioxide (State 1 Hour)</u>					
1986	0	--	--	0	0
1987	0	--	--	0	0
1988	0	--	--	0	0
1989	0	--	--	0	0
1990	0	--	--	0	0
<u>Sulfur Dioxide (State 1 Hour)</u>					
1986	0	--	--	0	0
1987	0	--	--	0	0
1988	0	--	--	0	0
1989	0	--	--	0	0
1990	0	--	--	0	0
<u>PM-10 (State 24 Hours)</u>					
1986	17	--	--	3	13
1987	22	--	--	5	18
1988	20	--	--	7	18
1989	18	--	--	13	21
1990	22	--	--	10	23

¹ California Air Resources Board, 1986-1991, California Air Quality Data Annual Summary, Vols. XVIII-XXII.

Impact

- 4.15-1 The project would increase regional emissions of criteria pollutants through new vehicle travel and area-source emissions associated with residential and industrial uses in excess of threshold levels established by San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). These emissions would add to the regional emission burdens within the San Joaquin Valley air basin and the adjacent San Francisco Bay Area air basin, and delay eventual attainment of air quality standards for ozone and suspended particulate matter (PM-10).**

Vehicle trips to, from, and within the project site would result in air pollutant emissions over a relatively large area. To estimate the emissions associated with the project, the URBEMIS-3 computer program, developed by the California Air Resources Board, was applied to project land uses. Travel data on numbers of trips and average trip length by trip type were derived from the transportation model used to analyze the traffic impacts of the project as input to the URBEMIS-3 program. The analysis was carried out for the years 1995, 2000, 2005, and 2010.

The daily increases in regional emissions of four regional pollutants under two scenarios have been identified (Tables 4.15-3 and 4.15-4). The first scenario, called the Proposed Project Scenario, assumes 100 percent buildout of all proposed land uses. The second scenario, or the Market-Constraint Scenario, assumes buildout of only 44 percent of employment-generating land uses. Both these scenarios are addressed in the Transportation section of this DEIR (Section 4.14).

Under the Proposed Project Scenario, emissions would be lower than the Market-Constraint Scenarios. By 2010, the Proposed Project Scenario would result in emissions that are from 0.3 percent (PM-10) to 6.5 percent (NO_x) of total Countywide emissions (Table 4.15-3). Under the Market-Constraint Scenario, emissions would be higher due to increased commuting outside the project site. The majority of emissions shown in Tables 4.15-3 and 4.15-4 would occur within the San Joaquin Valley air basin. However, a substantial portion would also occur in the neighboring San Francisco Bay air basin.

Using the threshold of significance of 150 pounds per day for hydrocarbons and oxides of nitrogen, the Proposed Project Scenario would exceed this threshold by about 5,550 to 8,050 pounds per day in 2010 (Table 4.15-3). For PM-10 emissions, with a threshold of significance of 80 pounds per day, the Proposed Project Scenarios would exceed the threshold by 827 pounds per day by 2010 (Table 4.15-3). The exceedances of these thresholds by the Market-Constraint Scenario would be even greater. These emission impacts would be significant and unavoidable.

Daily emissions associated with proposed residential uses are also shown in Tables 4.15-3 and 4.15-4. Residential uses contain a number of dispersed and intermittent sources of pollutants, such as space and water heaters, household paints and solvents, fireplaces and wood stoves, lawn mowers, and other equipment. Annual emission rates for residential uses were taken from published sources (Bay Area Air Quality Management District, 1985).

The industrial portions of the project could include industrial sources of air pollutants. Industrial emissions could be "criteria" pollutants or toxic air contaminants (TACs). The type or amount of such emissions is not predictable, because it would depend on the individual uses that might locate within the project. **Potential emissions from industrial sources have been estimated using per-acre emission factors for industrial uses (BAAQMD, 1985). A composite emission factor was generated for three industrial groups likely to locate within the project.⁶ The resulting daily emissions at buildout of the industrial portions of the proposed project were 955 pounds per day of reactive organic gases (ROG), 64 pounds per day for NO_x, 21 pounds per day for PM-10, and 7 pounds per day for SO_x.**

TABLE 4.15-3

PROJECT EMISSIONS UNDER PROPOSED PROJECT SCENARIO
(pounds per day)

	ROG	NO _x	PM-10	SO _x
<u>1995</u>				
Automobile emissions	758	1,318	143	164
Residential emissions	334	66	23	4
Total	1,092	1,384	166	168
% of countywide	0.7	1.1	0.05	0.7
<u>2000</u>				
Automobile emissions	1,642	3,035	307	366
Residential emissions	865	173	60	10
Total	2,507	3,208	367	376
% of countywide	1.6	2.5	0.1	1.5
<u>2005</u>				
Automobile emissions	2,249	5,670	588	682
Residential emissions	1,390	277	96	17
Total	3,639	5,947	684	700
% of countywide	2.4	4.7	0.2	2.9
<u>2010</u>				
Automobile emissions	3,875	7,842	781	917
Residential emissions	1,827	364	126	22
Total	5,702	8,206	907	939
% of countywide	3.7	6.5	0.3	3.9

Notes: ROG = Reactive organic gases (hydrocarbons)
 NO_x = Nitrogen oxides
 PM-10 = Particulate matter, ten microns
 SO_x = Sulfur oxides

Any future industrial sources that would locate within the project would be subject to the rules and regulations of the San Joaquin Valley Unified Air Pollution Control District. Under the provisions of the California Clean Air Act, any future industrial sources would be subject to the "no net increase" strategy included in the 1991 Air Quality Attainment Plan (SJVUAPCD, 1991b 1992). **Under the proposed New and Modified Source Review rule in the 1991 Air Quality Attainment Plan, the emissions from industrial sources would be offset by reductions at existing sources elsewhere in the air basin, with no net effect on air quality.**

⁶The emission rates for semiconductor, electronic components, and electronic instruments industry groups were averaged. These emission factors are for uncontrolled sources and had to be reduced by a control factor to estimate emissions from a new source constructed today. PM-10 and NO_x emission rates were reduced by 75 percent; the ROG emission rate was reduced by 90 percent.

4.15 AIR QUALITY

The implementation of mitigation measures discussed below has the potential of reducing project impacts on regional air quality by about **10 to 20 to 35** percent, but the impact would remain significant after implementation of all measures. Further reductions can only be reasonably expected through indirect source control programs that require action by the San Joaquin Valley Unified Air Pollution Control District.

Greater air quality mitigation can be accomplished through off-site mitigation or imposition of mitigation fees. Off-site mitigation would consist of developer-funded programs, projects or improvements elsewhere in the air basin that would result in reductions in emissions that could be utilized to reduce the overall impact of the project. A mitigation fee program would pool funds collected from developers to fund similar projects.

TABLE 4.15-4
PROJECT EMISSIONS UNDER MARKET-CONSTRAINT SCENARIO
(pounds per day)

	ROG	NO _x	PM-10	SO _x
<u>1995</u>				
Automobile emissions	1,685	3,100	338	398
Residential emissions	334	66	23	4
Total	2,019	3,166	361	402
% of countywide	1.3	2.5	0.1	1.6
<u>2000</u>				
Automobile emissions	2,789	5,224	530	631
Residential emissions	865	173	60	10
Total	3,604	5,397	590	641
% of countywide	2.4	4.3	0.2	2.6
<u>2005</u>				
Automobile emissions	4,145	8,200	832	966
Residential emissions	1,390	277	96	17
Total	5,535	8,476	928	983
% of countywide	3.6	6.7	0.3	4.1
<u>2010</u>				
Automobile emissions	4,922	9,778	957	1,133
Residential emissions	1,227	364	126	22
Total	6,749	10,142	1,083	1,155
% of countywide	4.4	8.0	0.4	4.8

Notes: ROG = Reactive organic gases (hydrocarbons)
 NO_x = Nitrogen oxides
 PM-10 = Particulate matter, ten microns
 SO_x = Sulfur oxides

These strategies are included in the *Draft 1991 Air Quality Attainment Plan* (SJVUAPCD, 1991a) as part a proposed New and Modified Indirect Source Review regulation, with rule adoption scheduled for the end of 1991.

The following mitigation measures are recommended by the authors of this DEIR to help reduce total emissions. However, regional emission impacts would not be fully mitigated by these measures.

Mitigation Measures

- 4.15-1(a) *At the time of the Specific Plan, land uses and densities should be oriented towards pedestrian/bicycle travel for local trips. The basic strategy should be to place residential uses within one-quarter to one-half mile from commercial uses, schools, and parks.*

- 4.15-1(b) *Park-and-ride and transit amenities should be provided within the project to promote and facilitate use of alternatives to the single occupancy vehicle for trips to and from the project site. This measure is identical to Mitigation Measure 4.14-1(d) in Section 4.14, Transportation.*
- 4.15-1(c) *A system of pedestrian/bicycle/electric vehicle paths should be established connecting residences to shopping, employment, and recreational uses to encourage non-auto travel for short trips. Such paths should be identified at the time of the Specific Plan.*
- 4.15-1(d) *The project sponsor should establish a Transportation Management Organization (TMO) to develop and implement trip reduction programs within the project. The TMO should establish and implement a site-specific Travel Demand Management (TDM) plan, including ongoing funding and monitoring and inclusion of TDM elements in lease agreements. **A performance standard of 1.5 passengers per vehicle occupancy during peak travel periods shall be the goal of TDM elements. The TMO would be responsible for preparing educational material to be distributed to new homeowners within the project regarding the need to reduce air pollution sources and information on commute and travel alternatives.** This measure is ~~identical~~ similar to Mitigation Measure 4.14-2 1(c) in Section 4.14, Transportation.*
- 4.15-1(e) *Telecommuting should be encouraged through policies, land use mixes, and zoning ordinances that provide incentives and minimize restrictions for offices in homes and satellite work centers within the project.*
- 4.15-1(f) *The impact of residential fireplace emissions of PM-10 and carbon monoxide on air quality can be reduced by restricting the number of fireplaces to one per residence, **installing natural gas fireplaces**, or requiring residential use of EPA-certified wood stoves or fireplace inserts, which reduce PM-10 emissions 70 to 90 percent compared to conventional wood stoves or fireplaces. **Low NO_x space and water heaters, in use in several areas of California, should be installed in residences. Electric lawnmowers and blowers should be provided with the sale of residential units, and an electrical outlet and a natural gas line should be provided to the backyard of each residence to provide an alternative to charcoal barbecues.***
- 4.15-1(g) *The project sponsor, through the TMO, should ensure an adequate level of transit service for the project residents and workers. This mitigation measure is identical to Mitigation Measure 4.14-1(e).*
- 4.15-1(h) *The mixture of land uses within the project should attempt to locate mutually-supportive land uses in proximity to one another to reduce trip generation or vehicle miles travelled. Locating neighborhood commercial services, day care, schools, and playgrounds within short distances to*

residential uses would be an example of such mutually-supportive land uses. Providing commercial services such as banking, restaurants, or fitness centers in close proximity to employment-generating uses would be another appropriate land use mix.

4.15-1(i) *The County should incorporate a requirement for an air quality mitigation fee as part of the Development Title. Such a fee could be imposed when new projects generating more than 200 trips per day are not able to reduce trip generation by at least 25 percent. This fee could be used for air quality improvements such as park and ride facilities, transit, and vehicle inspection.*

4.15-1(j) **Industrial or commercial operations with equipment that causes or has a potential for air pollution or that controls such air pollution may need to apply for an Authority to Construct and Permit to Operate according to regulations of the San Joaquin Valley Unified Air Pollution Control District.**

Impact

4.15-2 The project would increase the potential for air quality and odor-related land-use conflicts.

The proposed project would place urban land uses in proximity to existing agricultural lands, increasing the potential for air quality-related land-use conflicts. Conflicts between new residential uses and existing agricultural uses have been increasingly reported from recently urbanized areas within the Sacramento and San Joaquin valleys. Tilling, waste burning, and pesticide application are typical agricultural activities that can elicit complaints from nearby residences. Future residents of the proposed project are likely to be immigrants from other urban areas who are not tolerant of the dust, odors, and other emissions associated with normal agricultural practices. The potential for conflict would appear to be greatest along the western edge of the proposed project. An increase in complaints to the San Joaquin Valley Unified Air Pollution Control District could be expected with development of the site.

In addition to agricultural-related conflicts, the proposed land-use plan for the site places residential uses adjacent to industrial uses, and residences across the street from a proposed sewage treatment plant in the northeast corner of the project site (Figure 3.7). These land use combinations have the potential to generate odor and nuisance complaints, and could unnecessarily expose residents to "criteria" pollutants and toxic air contaminants released from industrial uses.

Mitigation Measures

- 4.15-2(a) *Prior to adoption of the General Plan amendment, buffer zones between existing agricultural lands and residences should be provided. The size of the buffer zone should be determined by the type of agricultural activities involved, with a larger buffer required where the agricultural activities require frequent tilling, waste burning, or pesticide application. A minimum of 1,000 feet is recommended (see Alternative 5.5). The buffer zone could consist of a mixture of open space, compatible land uses (such as a water treatment plant, some commercial uses, some clean industrial uses), recreational uses, landscaped areas, streets, or other non-intensive uses.*
- 4.15-2(b) *Residential uses should be provided with minimum 500-foot buffer zones between industrial uses and the wastewater treatment plant. The buffer zone could consist of a mixture of open space, recreational uses, landscaped areas, streets, or other non-intensive uses. Such buffer zones should be identified prior to the approval of the proposed General Plan amendment.*

Project traffic would add to concentrations of carbon monoxide along streets and near intersections providing access to the project site. Computer modeling of carbon monoxide levels, utilizing the CALINE-4 program developed by the California Department of Transportation, was conducted for locations near the most heavily-congested intersections in the project vicinity and along the I-205 and I-580 freeways under worst-case traffic and meteorological conditions for both the Proposed Project Scenario and the Market-Constraint Scenario. These locations were selected as having the highest potential for carbon monoxide, based upon the volume of traffic and congestion conditions, and concentrations at these location should represent the

highest to be expected near the project site. The worst carbon monoxide concentration would occur under the Market-Constraint Scenario in 2005, before complete buildout of the project due to increased commuting. Commuting would be required with less employment-generating land uses under the Market-Constraint Scenario.

The CALINE-4 results indicate that project traffic would increase carbon monoxide concentrations by as much as 4.0 parts per million on I-580 during the 1-hour averaging time (Table 4.15-5) and 2.4 parts per million during the 8-hour averaging time by 2005 on I-580 (Table 4.15-6). Existing and future concentrations remain substantially below the State and Federal ambient air quality standards, so this impact would be less than significant.

TABLE 4.15-5
WORST CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS
(parts per million)

Location	Case	Existing	1995	2000	2005	2010
Byron Highway/ Mountain House Road	No Build	6.3	6.3	6.4	6.0	6.2
	Scenario 1 ¹		6.6	6.4	6.3	6.2
	Scenario 2 ²		7.0	6.9	6.8	6.5
Patterson Pass Road/ Byron Highway	No Build	6.6	6.2	6.3	5.9	5.8
	Scenario 1		6.8	7.8	8.0	7.4
	Scenario 2		7.0	7.5	10.0	9.0
Patterson Pass Road/ Grant Line Road	No Build	5.8	5.6	5.4	5.3	5.8
	Scenario 1		5.9	6.3	6.6	6.6
	Scenario 2		6.5	7.5	9.5	9.3
Mountain House Road/Grant Line Road	No Build	6.5	5.9	5.8	6.0	6.0
	Scenario 1		6.6	7.1	7.5	7.7
	Scenario 2		7.3	7.2	7.5	7.6
Grant Line Road/ Byron Highway	No Build	7.1	6.5	6.3	6.0	6.0
	Scenario 1		8.4	7.3	9.0	9.3
	Scenario 2		6.5	8.6	10.2	9.8
I-205 east of I-580	No Build	10.0	9.8	10.8	10.3	9.8
	Scenario 1		9.8	11.2	10.4	10.0
	Scenario 2		9.9	11.0	10.1	13.4
I-580 west of I-205	No Build	10.5	11.0	12.8	13.6	13.2
	Scenario 1		11.3	13.8	14.2	14.0
	Scenario 2		11.5	14.0	14.5	13.4

¹ Scenario 1: Proposed Project Scenario.

² Scenario 2: Market-Constraint Scenario.

TABLE 4.15-6
WORST CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS
(parts per million)

Location	Case	Existing	1995	2000	2005	2010
Byron Highway/ Mountain House Road	No Build	3.8	3.8	3.8	3.6	3.7
	Scenario 1 ¹		4.0	3.8	3.8	3.7
	Scenario 2 ²		4.2	4.5	6.0	3.9
Patterson Pass Road/ Byron Highway	No Build	4.0	3.7	3.8	3.5	3.5
	Scenario 1		4.1	4.7	4.8	4.4
	Scenario 2		4.2	4.5	6.0	5.4
Patterson Pass Road/ Grant Line Road	No Build	3.5	3.4	3.2	3.2	3.5
	Scenario 1		3.5	3.8	3.8	4.0
	Scenario 2		3.9	4.5	5.7	5.6
Mountain House Road/Grant Line Road	No Build	3.9	3.5	3.5	3.6	3.6
	Scenario 1		3.8	4.3	4.5	4.6
	Scenario 2		4.4	4.3	4.5	4.6
Grant Line Road/ Byron Highway	No Build	4.3	3.9	3.8	3.6	3.6
	Scenario 1		5.0	4.4	5.4	5.6
	Scenario 2		3.9	5.2	6.1	5.9
I-205 east of I-580	No Build	6.0	5.9	6.5	6.2	5.9
	Scenario 1		5.9	6.7	6.2	6.0
	Scenario 2		5.9	6.6	6.1	8.0
I-580 west of I-205	No Build	6.3	6.6	7.7	8.2	7.9
	Scenario 1		6.8	8.3	8.5	8.4
	Scenario 2		6.9	8.4	8.7	8.0

¹ Scenario 1: Proposed Project Scenario.

² Scenario 2: Market-Constraint Scenario.

Impact

4.15-3 Construction activities would generate dust and particulate matter which could exceed the PM-10 threshold of significance by 0.96 ton per day.

Construction activities would include clearing, excavation, grading, construction vehicle traffic on unpaved ground, and wind blowing over exposed earth. Construction dust would affect local and regional air quality at various times during the build-out period of the project. The dry, windy climate of the area during the summer months combined with the fine, silty soils of the region create a high potential for dust generation.

Where construction is occurring upwind of previously-completed portions of the project, a potential for dust nuisance would be created. The effects of construction activities would include increased dust fall and locally-elevated levels of particulate matter. Dust fall would soil exposed surfaces, requiring more frequent washing during the construction period.

The emission of particulate matter from construction is often considered a temporary source that has local effects but not regional effects. Given the large size and long build-out period for the project, however, construction is likely to affect regional air quality as well. An approximate estimate of construction over a 20-year buildout period is 7,590 tons of PM-10, which averages to about one ton per day.⁷ The increase would be partially offset by the elimination of agricultural activities on the site, but existing agricultural PM-10 emissions would represent only a small fraction of construction emissions.

Normal construction dust practices (occasional watering) would not be effective in reducing the local and regional dust and PM-10 impacts of project construction. The low humidity and high winds typical of the site much of the year would make this control method ineffectual. The San Joaquin Valley Unified Air Pollution Control District is currently considering adopting PM-10 control regulations for construction sites as part of the PM-10 State Implementation Plan (SIP) for the San Joaquin Valley planning area. **While** this SIP is ~~expected to be~~ **was** adopted by November of 1991, **the regulations are not expected to be adopted until mid-1992.** The regulations for construction activities would require that a permit be obtained from the District prior to the start of construction. A permit would not be granted until an approved PM-10 (Dust) Prevention and Control Plan were prepared by the applicant. Initially, the proposed rule would only require 25 percent control of dust, but every three years after adoption the control requirement would increase by 25 percent until, after six years, 75 percent control would be required (SJVUAPCD, 1991a).

Mitigation Measures

4.15-3 *The severity of construction impacts can be reduced to a level that is less-than-significant through application of appropriate mitigation measures. To ensure that construction mitigation is implemented, final approval should not be given to any site development until the developer/contractor submits a satisfactory construction mitigation plan. This plan should specify the methods of control that would be used, demonstrate the availability of needed equipment and personnel, and identify a responsible individual who, if needed, could authorize generation and implementation of additional measures.*

⁷It has been assumed that PM-10 fraction of Total Suspended Particulate is 50 percent, and that the period of active construction for any site averages three months. The acreage affected by construction activities excludes acreages for Linear Park/Wetlands, Agricultural Buffer, and Waterway uses. The emission factor used was 1.2 tons/month/acre. (U.S. EPA, 1985).

The construction dust mitigation plan should, at a minimum, include the following recommendations or equivalent measure for areas of active construction:

- suspend earthmoving or other dust-producing activities during periods of high winds when dust control measures are ineffective in controlling visible dust plumes;
- ~~provide equipment and staffing for watering of all exposed or disturbed soil surfaces at least twice daily, including weekends and holidays. An appropriate dust palliative or suppressant, added to water before application, should be used;~~ **make available dust control equipment and staff as needed to control excessive amounts of dust from excavated or graded soil surface areas. The dust control measures should be in conformance with Air Pollution Control District regulations and may include, but are not limited to, soil stabilization or soil surface treatment. When water is used to treat the soil surface an appropriate dust palliative or suppressant should be added to the water before applications;**
- water or cover stockpiles of debris, soil, sand, or other materials that can be blown by the wind;
- sweep construction areas and adjacent streets of all mud and debris, since this material can be pulverized and later resuspended by vehicle traffic;
- limit the speed of all construction vehicles to 15 miles per hour on unpaved roads while on site;
- cover or wet down all materials transported by truck; ~~and~~
- water all inactive portions of the site with an appropriate dust suppressant or cover or seed inactive areas. Completed areas of the site and long-term stockpiles of soil should be seeded within 30 days of completion of activity.

The portions of the site development, if any, which have not been subjected to excavation or grading operations, and where soil surface conditions have not changed since prior to construction activities do not require dust control treatment. However, once the soil surface conditions have been altered by construction activities, the developer/contractor should be responsible for maintaining the approved dust control plan measures for areas that are active or which have subsequently become inactive.

4.16 NOISE

SETTING

Existing Noise Levels

Major noise sources in the vicinity of the project site are vehicular traffic on Interstate 205, Byron Road, Patterson Pass Road and Grant Line Road and trains on the Southern Pacific track, adjacent to Byron Road (Figure 4.16-1). Sensitive receptors inside or adjacent to the project site include several residences located along Grant Line Road and Patterson Pass Road. To evaluate the existing noise environment, five long-term and seven short-term (15-minute) noise measurements were taken within or near the project site in 1991 by the DEIR authors (Figure 4.16-1 and Appendix 10.18).¹

Project Site

Four long-term and two short-term (15-minute) measurements were conducted within the project site in January 1991 (Locations A to D and 1 and 2 on Figure 4.16-1). The first long-term (23-hour) measurement was conducted at a distance of 110 feet from the centerline of Byron Road and 35 feet to the east of the Southern Pacific tracks (Location A on Figure 4.16-1). No train passbys were recorded during the measurement. The 24-hour day/night average noise level (L_{dn}) was 69 decibels (dB) (Table 4.16-1). A 15-minute measurement was also conducted at this location during mid-day (Location 1 on Figure 4.16-1). Based on traffic counts during the 15-minute measurement, 29 percent of the vehicles on Byron Road were heavy trucks (i.e., greater than 16,000 pounds).

TABLE 4.16-1

EXISTING AVERAGE NOISE LEVELS AT KEY LOCATIONS
WITHIN AND NEAR THE PROJECT SITE¹

Location ²	Description	Distance to Centerline (feet)	Average Noise Level (dBA)
A	Byron Road	110	L_{dn} ³ of 69
B	Patterson Pass Road	24	L_{dn} of 72
C	Right-of-Way of I-205	115	L_{dn} of 81
D	Grant Line Road	30	L_{dn} of 70
E	Mountain House Road	70	L_{dn} of 66
1	Byron Road	110	L_{eq} ⁴ of 64
2	Patterson Pass Road	50	L_{eq} of 62
3	Van Sostem Road	82	L_{eq} of 51
4	Hansen Road	50	L_{eq} of 44
5	Grant Line Road	100	L_{eq} of 56
6	Bethany Road	100	L_{eq} of 52
7	Kelso Road	100	L_{eq} of 52

¹ Refer to Figure 4.16-1 for exact locations of measurements.

² Locations with letter refer to long-term noise measurements. Locations with number refer to 15-minute noise measurement.

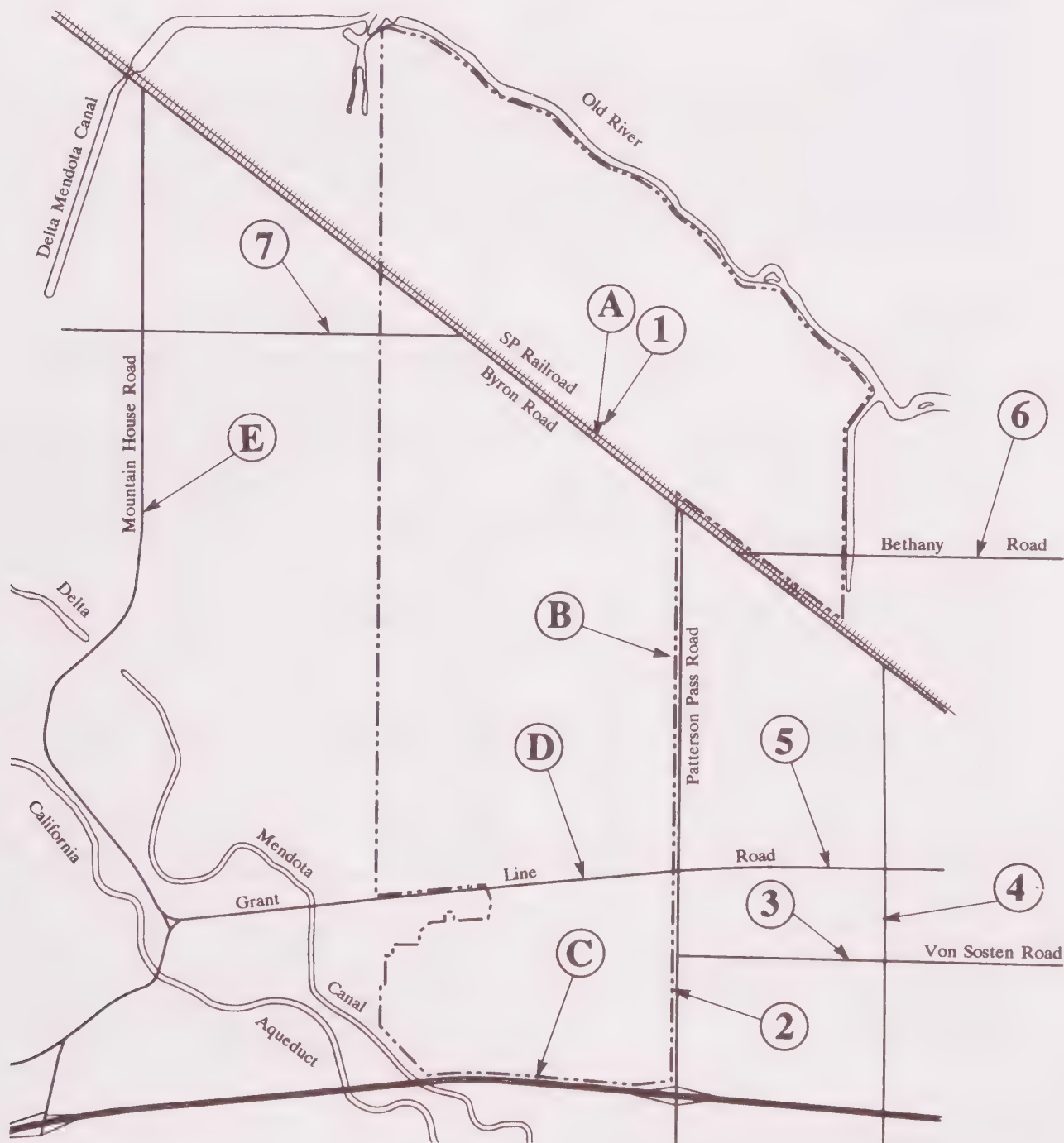
³ L_{dn} is a descriptor established by the U.S. Environmental Protection Agency (EPA) for the 24-hour average A-weighted noise level. Sound levels during the hours from 10:00 PM to 7:00 AM are penalized 10 dB to account for increased sensitivity during the night time hours.

⁴ L_{eq} is the average A-weighted noise level during the measurement period.

¹All noise measurements were conducted with Larson-Davis Laboratories Model LDL-700 integrating sound level meters equipped with Bruel & Kjaer Type 4176 pre-polarized condenser microphones. These meters meet the electric frequency response criteria of American National Institute Standard S1.4-1971 for Type 1 (precision) sound level meters. The meters were calibrated before and after each measurement. A discussion of the fundamentals of acoustics and definitions of acoustical terms used in this report are included in Appendix 10.18.

NOISE MEASUREMENT LOCATIONS

Figure 4.16-1



Legend

(A) Long-Term Measurement Locations ¹

(1) Short-Term Measurement Locations ¹

----- Project Site Boundary



¹Refer to Table 4.6-1 for matching noise levels.

A second measurement (24-hour) was conducted along Patterson Pass Road, at a distance of 24 feet from the center of the road (Location B on Figure 4.16-1). The L_{dn} at this location was 72 dB (Table 4.16-1). The third long-term measurement (24-hour) was conducted at a distance of 55 feet from the edge of the pavement of Interstate 205 (at the right-of-way) and west of the Patterson Pass Road overpass (Location C on Figure 4.16-1). The L_{dn} at this location was 81 dB (Table 4.16-1). The fourth long-term measurement (23 hour) was conducted at a distance of 30 feet from the centerline of Grant Line Road (Location D on Figure 4.16-1). The L_{dn} was 70 dB (Table 4.16-1).

A 15-minute measurement was conducted at a distance of 50 feet from the centerline of Patterson Pass Road and to the north of Interstate 205 (Location 2 on Figure 4.16-1). Noise levels at this location were dominated by traffic on Patterson Pass Road. Distant traffic noise emanating from Interstate 205 was audible but not significant. The L_{eq} was 62 dB (Table 4.16-1) and the L_{dn} was estimated to be between 64 to 66 dB.

Four single-family homes, located adjacent to Patterson Pass Road and north of Grant Line Road, are currently experiencing noise levels ranging from an L_{dn} of 61 to 67 dB, depending on their setback distance from the road. An additional four homes, located along Patterson Pass Road and south of Grant Line Road, are currently exposed to an L_{dn} of 60 to 62 dB due to noise generated from traffic on Patterson Pass Road. About 15 homes, located along Grant Line Road between Mountain House Road and Patterson Pass Road, are currently exposed to an L_{dn} between 61 and 64 dB due to traffic on Grant Line Road, depending on their setback distance from the road.

The Southern Pacific Company operates a line within the project site which runs parallel to Byron Road (Figure 4.16-1). Although the line is reported to be operational (Connor, 1991), no train movements were recorded during the monitoring survey. About five freight trains per day access the tracks. The trains travel at high speeds and have between 70 to 85 cars (Connor, 1991). Based on this information, the contour distances to an L_{dn} of 55, 60, and 65 dB are 420, 230, and 100 feet, respectively, from the tracks. Train whistles typically generate noise levels between 100 to 105 dB at a distance of 100 feet. Diesel locomotives generate noise levels between 85 to 95 dB at a distance of 100 feet, depending on the speed, the grade, and the type of the track. Future operations on this line are not known at the present time; however, this line will remain operational indefinitely (Connor, 1991).

Project Vicinity

Several residential clusters are currently located near the proposed Mountain House project site. Noise measurements were conducted at typical residential setbacks to the roadways that would carry project-generated traffic (Figure 4.16-1). Detailed results of the measurements are shown in Appendix 10.18 and summarized below.

A 23-hour measurement conducted along Mountain House Road during the preparation of the Vasco Road and Utility Relocation EIR (Illingworth & Rodkin, Inc., 1989) was used to quantify existing noise levels along that roadway (Location E on Figure 4.16-1). The L_{dn} at a distance of 70 feet from the centerline of Mountain

House Road is currently 66 dB (Table 4.16-1). This noise level is representative of the noise exposure for several residences and a school located along this stretch of Mountain House Road.

Several single-family residences are located along Van Sosten Road, east of Patterson Pass Road. Lammersville School is located at the northwest quadrant formed by Van Sosten Road and Hansen Road. A 15-minute measurement was conducted at a distance of 82 feet from the centerline of Van Sosten Road, the setback for residences and the school playground areas (Location 3 on Figure 4.16-1 and Table 4.16-1). Van Sosten Road traffic was the only significant noise contributor during the measurement. Noise levels at setbacks of adjacent residences and the Lammersville School range between an L_{dn} of 50 to 52 dB.

A second 15-minute measurement was conducted at a distance of 50 feet from the centerline of Hansen Road (Location 4 on Figure 4.16-1 and Table 4.16-1). Traffic volumes along Hansen Road were very low during the measurement. The measurement location is typical of the setback distance of existing residences to Hansen Road. These residences are currently exposed to an L_{dn} between 43 to 45 dB due to traffic on Hansen Road. A 15-minute measurement at a distance of 100 feet from the center of Grant Line Road yielded an L_{eq} of 56 dB (Location 5 on Figure 4.16-1 and Table 4.16-1). Two homes are currently located off Grant Line Road and between Patterson Pass Road and Hansen Road. The home nearest the roadway (50 feet) is exposed to an L_{dn} of about 65 dB and the one further back (500 feet) is exposed to an L_{dn} of 50 to 55 dB.

A third 15-minute measurement was conducted at a distance of 100 feet from the center of Bethany Road (Location 6 on Figure 4.16-1). During the measurement, traffic on Bethany Road was the most significant noise contributor resulting in an L_{eq} of 52 dB (Table 4.16-1). Two homes currently exist along this stretch of Bethany Road and their noise exposure is estimated at an L_{dn} between 51 to 53 dB.

The fourth 15-minute measurement was used to quantify the existing noise environment at the single residence along Kelso Road, west of Byron Road. The L_{eq} at a distance of 100 feet from the center of the road was 52 dB (Location 7 on Figure 4.16-1 and Table 4.16-1). Few cars accessed the road during the measurement, and based on the recorded noise levels and the traffic patterns observed, the L_{dn} at the existing house setback is estimated to be between 51 and 53 dB.

Based on data gathered during the noise monitoring activities, residences located in the areas surrounding the project site are currently exposed to low noise levels, representative of the rural character of the site and its vicinity.

IMPACTS AND MITIGATION MEASURES

CEQA guidelines state that a project normally has a significant adverse noise impact if it results in substantial noise level increases in areas adjacent to the project site. In establishing a significant noise impact, the proposed land uses are also evaluated against the noise and land use compatibility guidelines adopted by San Joaquin County.

San Joaquin County considers sites exposed to an L_{dn} below 65 dB to be compatible with residential development. Noise-sensitive land uses, such as schools, group care facilities, and hospitals, are compatible on sites exposed to noise levels below an L_{dn} of 60 dB. The County criterion for residential development is less restrictive than that recommended by the State of California. The State considers residential developments to be a noise-sensitive land use. The State and most local governments have adopted an L_{dn} of 60 dB as the maximum "clearly acceptable" noise level for residential development. The 60- L_{dn} criterion is based on the desire to protect against speech interference outdoors and also to protect against speech interference inside dwelling units with the windows open. The criterion is based on studies and research conducted by the United States Environmental Protection Agency (EPA) in the early 1970s. The EPA determined that 60 dB was the limit above which indoor and outdoor speech disturbance became significant in residential development. The EPA recommended that an L_{dn} of 55 dB be maintained in residential areas to provide for an adequate margin of safety.

The significant impact criterion for noise-sensitive land uses used to evaluate this project is an L_{dn} not to exceed 65 dB per County requirements. However, areas exposed to noise levels in excess of an L_{dn} of 60 dB would also be considered impacted. Subsequently, mitigation measures are proposed for noise-sensitive land uses exposed to noise levels in excess of an L_{dn} of 60 dB.

Existing residents in and around the project site could be potentially impacted by the proposed project. The San Joaquin County General Plan does not contain a quantitative noise criterion that defines the noise level increases that the County would consider as significant. Environmental noise level changes in excess of 3 dB are generally noticeable. An increase in noise level of 5 dB is considered clearly detectable and can result in adverse community response. In this DEIR, an increase of 5 dB in the L_{dn} at a sensitive receptor is considered significant.

The noise analysis addresses the Proposed Project Scenario and the Market-Constraint Scenario for traffic noise (Section 4.14, Transportation). The first scenario addresses 100 percent buildout of employment-generating land uses while the second assumes 44 percent buildout.

Impact

4.16-1 Residential development, schools, and other noise-sensitive land uses on the project site would be exposed to excessive noise levels, especially in the area between Grant Line Road and I-205.

Proposed Project Scenario. Future noise levels along major roadways in and around the project site were calculated using traffic data supplied for this project (DKS, 1991).² Based on the results of the modeling,

²The STAMINA, Version 2.0, noise prediction computer model, based on Federal Highway Administration Publication FHWA RD-77-108, was used to predict noise exposure along roadways. The model uses as input the average daily traffic volume (ADT), speed of vehicles, and vehicle composition (cars, medium trucks, and heavy trucks) to compute noise levels (L_{dn}) at selected distances from the roadway.

noise levels at buildout (2010) and with implementation of the project, would exceed an L_{dn} of 65 dB within 2,100 feet of Interstate 205. Noise levels would exceed an L_{dn} of 65 dB within 370 feet of Byron Road, resulting in a significant area above an L_{dn} of 65 dB between Grant Line Road and I-205 (Figure 4.16-2). An L_{dn} of 65 dB would also be exceeded within 230 feet of Grant Line Road and within 370 feet of Patterson Pass Road. Some new roads, constructed to service the project, would also carry enough traffic to generate a noise level above 65 dB at a significant distance from these roads (Figure 4.16-2).

The 60- and 65- L_{dn} noise contours are shown on the noise exposure map (Figure 4.16-2) to illustrate the distance to the County's recommended residential noise criterion and that recommended by the State. The shaded portions of the map indicate proposed noise-sensitive land uses that would be exposed to a noise level above an L_{dn} of 65 dB. For purposes of this analysis, noise-sensitive land uses include proposed residential development, schools, group care facilities, hospitals, and parks. Proposed noise-sensitive land uses between Interstate 205 and Grant Line Road would not be compatible with the noise environment. Portions of proposed noise-sensitive land uses adjacent to Grant Line Road, Patterson Pass Road, and Byron Road would be exposed above an L_{dn} of 65 dB (Figure 4.16-2). The proposed high school on the south side of Grant Line Road and west of Patterson Pass Road would be exposed to noise levels above an L_{dn} of 60 dB. Two elementary schools, in the vicinity of the high school, would also be exposed to noise levels above an L_{dn} of 60 dB. A third elementary school proposed north of Grant Line Road, at the western end of the project site would also be partially exposed to an L_{dn} above 60 dB. The second high school proposed at the southwest corner of Byron Road and Patterson Pass Road would be partially exposed to noise levels above an L_{dn} of 60 dB.

The noise exposure contours discussed above do not take into account shielding that would be provided by intervening buildings as the site develops. It is anticipated that these contours would be refined at the Specific Plan stage and needed noise mitigation measures developed at that time. It should be emphasized, however, that these contours do reflect the noise exposure that would exist at the first row of buildings along a given thoroughfare.

In addition to the traffic noise exposure depicted on Figure 4.16-2, noise sensitive land uses within 100 feet of the Southern Pacific railroad would be exposed to an L_{dn} of 65 dB and noise sensitive land uses within 230 feet of the railroad would be exposed to an L_{dn} in excess of 60 dB. These projections should be updated at the time of proposed development based on the best available train operations information at that time.

The proposed East Contra Costa County Airport would result in increased aircraft overflight noise levels at the project site. The proposed project would be four to five miles from the airport. The buildout noise contours for the airport contained in the Airport Expansion EIR (Drake, 1992) indicate that the Mountain House Community is well outside both the 65 and 60 L_{dn} noise exposure contours. However, the community is in the vicinity of the approach path to the airport. This means that some aircraft would probably fly over the project site. It is possible that noise levels generated

by business jets and some general aviation aircraft could occasionally annoy residents of the proposed project.

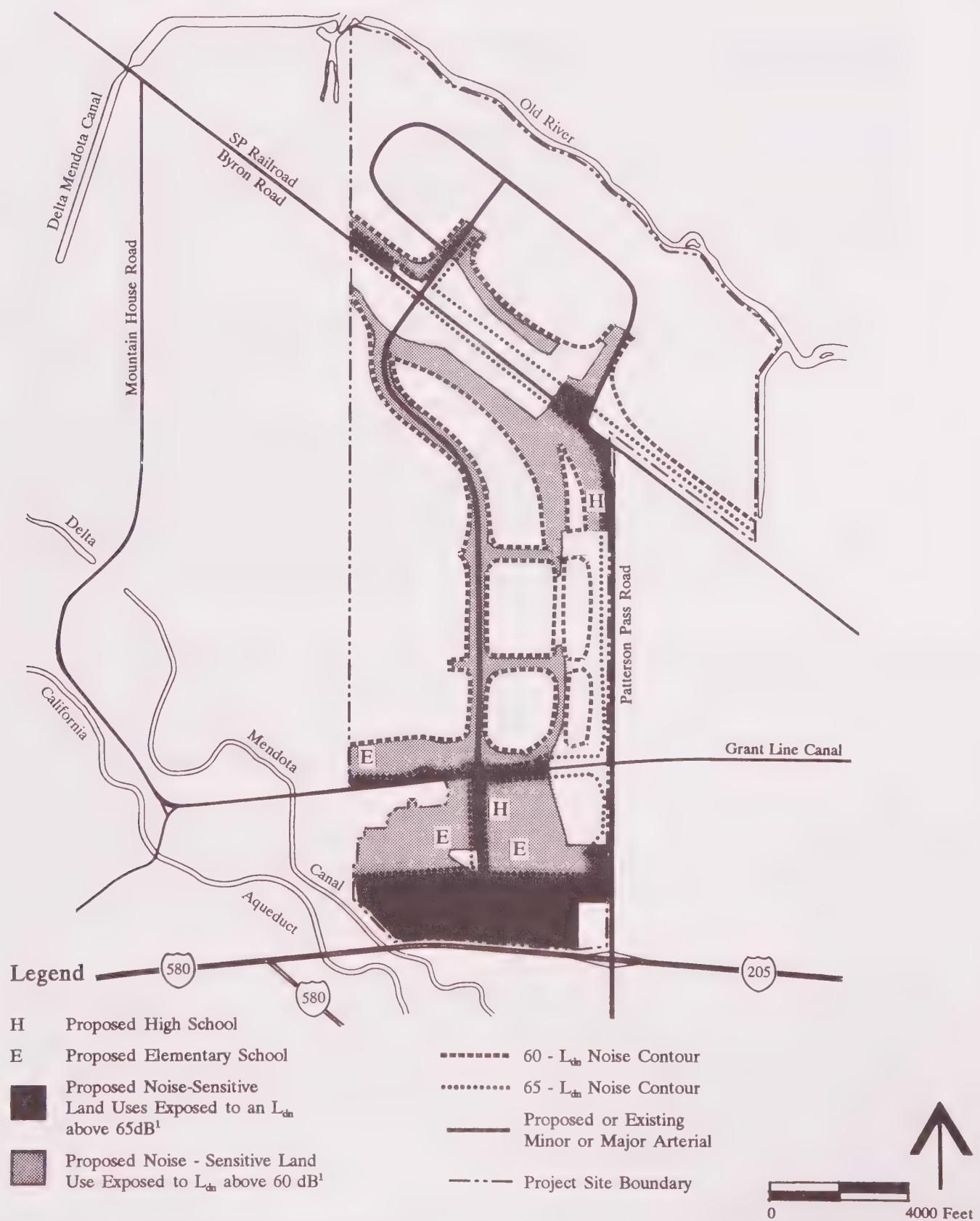
Market-Constraint Scenario. Under the Market-Constraint Scenario, future noise levels within the proposed Mountain House site would be generally similar to that for the proposed project. The same noise-sensitive land uses that are shown on Figure 4.16-2 as being potentially noise impacted, would be impacted under this scenario. In some cases, less of the land use would be exposed, reducing the amount of mitigation necessary to bring the land use into compliance with the County's criteria.

Mitigation Measures

- 4.16-1(a) *The siting of residential or other noise-sensitive land uses adjacent to Interstate 205 should be avoided. Future residences should be located outside the 65- L_{dn} freeway noise contour.*
- 4.16-1(b) *Locating noise-sensitive land uses as far as possible from major roadways is the preferable solution. When this is not feasible, or desirable, earth berms, or sound walls could be built between the noise source and the noise-impacted area. Typically, an earth berm provides 3 dB of additional noise attenuation over a sound wall of the same height. A sound wall at the top of an earth berm is more aesthetically pleasing than a sound wall of the same total height but, its performance to act as a noise barrier is inferior to an earth berm (Figure 4.16-3). Further noise level reductions to an L_{dn} of 60 dB could be achieved through proper site planning and*

FUTURE NOISE EXPOSURE (2010): PROPOSED PROJECT

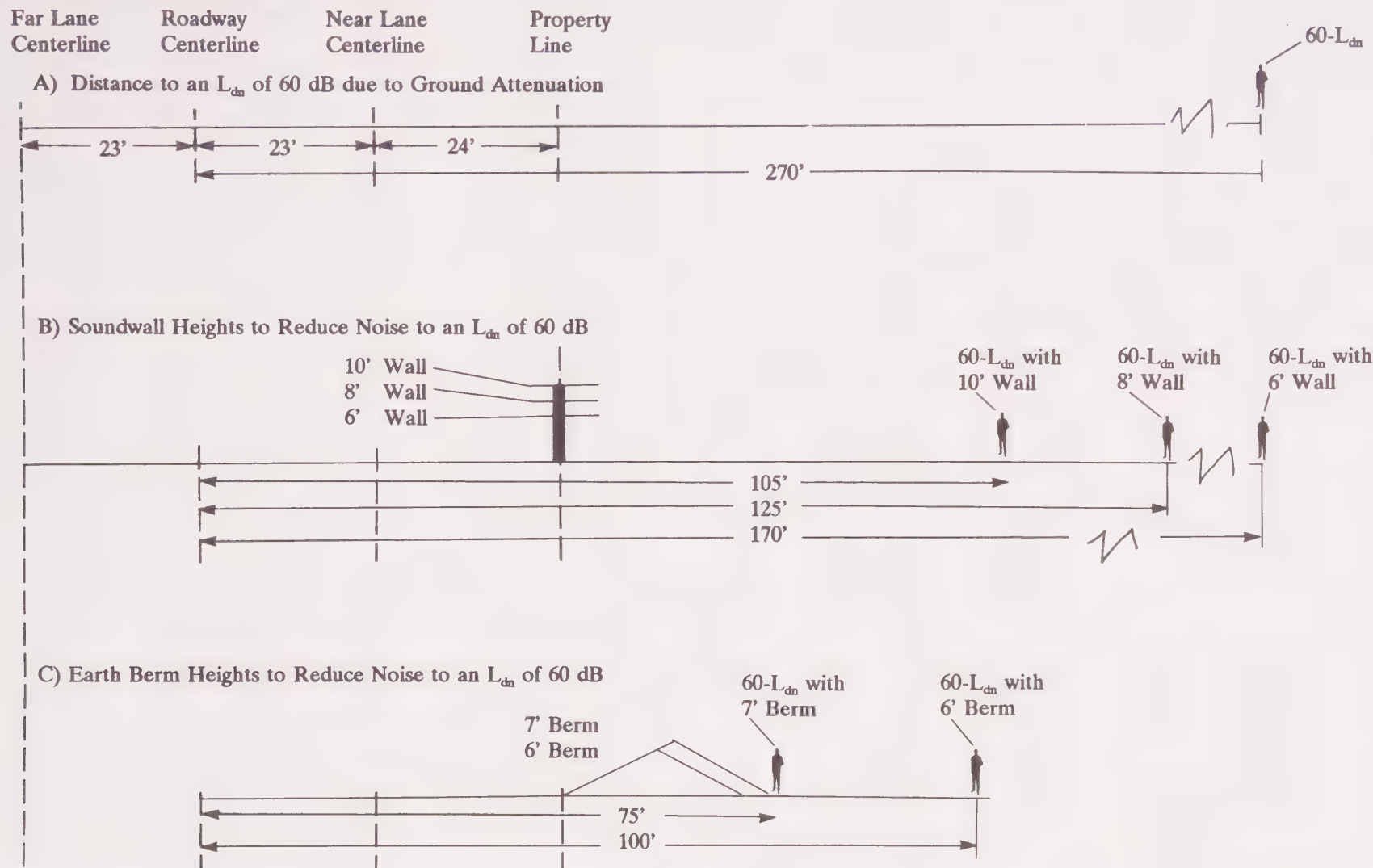
Figure 4.16-2



¹Based on land uses shown in Figure 3.7
The noise-sensitive land uses are residences, schools, or parks.

TRAFFIC NOISE REDUCTION ALTERNATIVES FOR TYPICAL MAJOR ROAD¹

Figure 4.16-3



Note: a) Berms over 7' high reduce traffic noise below an L_{dn} of 60 dB.
b) All berms assume a 2:1 slope.

¹Typical Major Road = 20,000 ADT, 35 mph, 5% Heavy Trucks.

Source: Illingworth and Rodkin, Inc.

0 20 Feet

BASELINE

*building orientation, construction of earth berms or sound walls, or a combination of more than one of these methods. **Site specific mitigation measures should be determined on a case-by-case basis.***

- 4.16-1(c) *Schools should not be sited in areas exposed to noise levels above an L_{dn} of 60 dB. The land use plan should be revised to relocate two proposed high schools and three elementary schools.*
- 4.16-1(d) *At the time of the Specific Plan, acoustical studies should be required for noise-sensitive land uses proposed to be located in areas exposed to noise levels above an L_{dn} of 60 dB. Appropriate mitigation measures should be recommended in these studies and implemented by the appropriate party to ensure that the L_{dn} of 60 dB is not exceeded.*
- 4.16-1(e) *Noise studies for specific residential projects proposed in noise impacted areas (exposed to an L_{dn} above 60 dB) should address how noise levels in outdoor use areas, such as backyards, patios, decks, etc., could be maintained below an L_{dn} of 60 dB. Other noise-sensitive land uses, such as schools, hospitals, and parks should also require similar studies.*
- 4.16-1(f) *Interior noise levels for housing proposed to be located in areas exposed to an L_{dn} above 60 dB should be maintained below an L_{dn} of 45 dB. Compliance with this recommended mitigation measure should be verified at the time of the Specific Plan.*
- 4.16-1(g) **Because of the potential for aircraft overflights, the results of a noise study should be included in the Specific Plan to determine whether changes in the land use plan and/or treatments to the noise sensitive structures would be required to minimize or eliminate noise impacts to project site occupants. Also, the County should consider requiring that potential new residents be notified of the presence of the airport and of the potential for aircraft overflights.**

Impact

- 4.16-2 **Existing residences located adjacent to existing roads in and around the proposed Mountain House New Town would be significantly impacted by project-generated traffic.**

Proposed Project Scenario. Several residences are currently located along Grant Line Road, Patterson Pass Road, Van Sostan Road, Hansen Road, and Byron Road near and within the project site. Most of these residences are directly accessed from these roads and are exposed to noise levels above an L_{dn} of 60 dB at the present time. Upon implementation of the proposed project, existing residences would be exposed to significantly higher noise levels.³ Traffic projections were provided for Grant Line Road and Patterson Pass

³The level of detail provided in the traffic assessment (Section 4.14, Transportation) did not allow for quantification of traffic noise level increases along all the smaller streets in the study area.

Road. Noise levels along Grant Line Road are expected to increase by as much as 8 dB. Noise levels along Patterson Pass Road at the eastern edge of the project site would increase by up to 10 dB. Implementation of the proposed project would expose existing residences (typically set back 50 feet from the road) to noise levels between an L_{dn} of 72 to 75 dB. These noise level increases are considered to be significant. Similar impacts would be expected on the smaller streets. Project-generated traffic would not cause a significant (+5 dB) increase outside the area bounded by Mountain House Road, Hansen Road, and Interstate 205.

Market-Constraint Scenario. Traffic noise increases along the existing roads in and around the project site would be within 0 to 2 dB of those projected for the proposed project. Nonetheless, significant impacts would still be expected in the vicinity of the project site, as described for the proposed project.

Mitigation Measure

- 4.16-2 *Outdoor use areas of existing residences that would be impacted (i.e., would experience an increase of 5 dB in the L_{dn}) by project-generated traffic noise should be protected from excessive noise. At the Specific Plan stage, the County should refine the traffic study and revise the acoustical analysis to identify potentially impacted residences (minimum noise level increases of 5 dB), and if feasible, offer mitigation measures to minimize the impacts.*

Mitigating impacts at individual residences could take the form of constructing sound walls along the roadways, soundproofing homes, or building barriers/fences around specific portions of yards to provide shielded outdoor spaces. Because of the nature of the development in the area, solutions would have to be tailored to each specific situation.

Impact

- 4.16-3 **Proposed noise-sensitive land uses adjacent to agricultural lands, could be significantly impacted by agricultural machinery and equipment noise.**

Noise-sensitive land uses are proposed along the western boundary of the project site. Lands west of the project site are expected to continue to be used for agricultural purposes, which involve the use of machinery, airplanes, and other equipment. The noise associated with agricultural activity could potentially impact future residents adjacent to the agricultural lands. Impacts associated with agricultural activity would be difficult to quantify. The degree to which future residents on the site could be potentially impacted by agricultural activity would depend on their proximity to the noise sources, the intensity of the agricultural activities, the types of equipment used, and other variables. Agricultural machinery could generate maximum noise levels in excess of 90 dBA at a distance of 50 feet from the equipment.

Mitigation Measures

- 4.16-3(a) *Earth berms, sound walls, or other mitigation identified at the Specific Plan stage should be constructed where noise-sensitive land uses would abut agricultural fields. Alternatively, a buffer zone between proposed noise-sensitive land uses and agricultural lands could be provided ~~prior to adoption of the General Plan Amendment~~. A 1,000-foot wide on-site buffer zone would reduce noise levels generated by agricultural machinery by approximately 20 dB.*

Impact

- 4.16-4 **Construction noise during the 17-year development period would be a significant noise impact.**

The proposed project would be constructed in four phases during a total period of 17 years. The projected completion date would be 2010. Development at the project site would consist of activities such as grading of the site, earth moving and paving of new roadways, or widening of existing roadway facilities. Other construction activities would include foundation work, use of impact tools, and building construction. Trucks would also be required to deliver and remove materials from the site. Many other kinds of construction equipment would also be used during the construction period. Typical noise levels resulting from construction equipment may occur for this project. However, for a project of this size, it would be difficult to predict average noise levels during construction periods.

Noise generated by construction activity would be audible and significant within several hundred feet from where construction occurs. Therefore, residences located within several hundred feet from the construction activity would be impacted. The impact of construction noise is considered to be significant but short in duration and site specific. In the case of construction noise impacts, it should be recognized that mitigation measures are offered to minimize the impact, but significant short-term, adverse noise impacts would still remain.

Mitigation Measures

- 4.16-4(a) ~~Noise-generating construction equipment, including truck traffic coming to and from the site for any purpose, should be limited to weekdays, between the hours of 8:00 AM and 5:00 PM if construction activity is within 500 feet of any existing residential development.~~ **Noise impacts during construction can be mitigated by controlling the hours of construction. This may be appropriate in some situations and should be considered on a case-by-case basis as construction proceeds in the new community.**
- 4.16-4(b) *All construction equipment powered by internal combustion engines should be properly muffled and maintained. The prudent selection of equipment, along with the use of proper mufflers, should limit construction-related noise generated by a particular piece of equipment to 85 dBA when measured at a distance of 50 feet from the piece of equipment operating at its noisiest mode.*
- 4.16-4(c) *All stationary noise-generating construction equipment, such as air compressors, should be located as far as possible from existing residences. Such equipment should be acoustically shielded where possible.*
- 4.16-4(d) *Quiet construction equipment, particularly air compressors, should be selected whenever possible.*

A significant amount of proposed residential development would be located in areas where the L_{dn} exceeds 60 dB. While this would not be considered a significant impact, based on the current County Noise and Land Use Compatibility Guidelines, this area would, nonetheless, be impacted. Figure 4.16-2 shows the location of the 60 L_{dn} contour. All proposed residential development between the 60 L_{dn} contour and the adjacent

road would be impacted. It is, therefore, strongly suggested that the developer consider mitigation measures which would reduce the noise of proposed residential development to an L_{dn} of 60 dB or less outdoors.

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